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STUDIES IN ADDISON'S DISEASE *

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In the spring of 1920, Dr. A. L. Muirhead, professor of pharmacology, Creighton University College of Medicine, Omaha, and an early investigator of the suprarenal gland, presented himself at the Mayo Clinic for treatment of Addison's disease in an advanced stage. In conference with the doctor, careful consideration was given to the existing conditions, to the previous treatment, and to the possibilities of a regimen of forced treatment. It was agreed that he himself was to keep a detailed record of the subjective and objective results of the treatment, and he was furnished with an apparatus for the study of the blood pressure. Epinephrin was given hypodermically and by rectum three times a day, and whole gland by mouth three times a day, in doses that represented his maximal tolerance. Gratifying improvement resulted, so gratifying, indeed, that he [1] described his experiences under the title, "An Autograph History of a Case of Addison's Disease." Unfortunately, the improvement lasted only a few months. I [2] outlined later the subsequent course of events that led to his death. Since this experience, the regimen, which we now call the Muirhead regimen, has been applied in eleven of the twenty other patients in the clinic who were suffering from Addison's disease. Data concerning these cases, and also concerning the twenty-seven observed in the Mayo Clinic previous to 1920, are reported here. However, since I have personal knowledge of only the twenty-one patients registering in the clinic since Jan. 1, 1920, the statistics concerning the twenty-six patients registering prior to that time are grouped separately, throughout this paper, Series 1 referring to the earlier cases, and Series 2 to the later.

In selecting the material for this report, the records of about seventy other cases were studied, in which the evidence suggesting the presence of Addison's disease was sufficient to result in registration of this diagnosis in the clinic cross index, but insufficient to justify a positive diagnosis.

Attempts were made to trace patients through follow-up letters to the patients, to members of their families, or to their physicians.

The forty-seven cases of Addison's disease seen in the Mayo Clinic since January, 1912, represent approximately one in every 6,600 patients, or sixteen to 100,000 patients registering. As will be seen from Table 1, males were more frequently affected than females in a ratio of 2:1. The average age at onset was approximately 40 years, the age of the youngest patient being 14, and the age of the oldest, 68 years (Table 1). The disease is preponderantly one of the fourth, fifth and sixth decades.

THE RELATION OF PREVIOUS ILLNESSES TO ADDISON'S DISEASE

The records were analyzed to see what previous illnesses were causative factors in Addison's disease. The diseases that appeared to have some definite etiologic bearing are listed in Table 2. In considering these data, it is necessary to recall the fact that the prevalence of influenza was such during the recent epidemics that a large proportion of all patients now seeking medical advice have previously suffered from this disease. We believe, however, that influenza was a causative factor in many of our cases, and as an intercurrent infection in Addison's disease it unfavorably influenced the course of events. While in many instances the patient's recovery was complete prior to the onset of Addison's disease, yet in a considerable number the beginning of the illness dated from an attack of influenza. Several patients said that they had never fully recovered, but had continued weak and run-down until Addison's disease was finally diagnosed. In some instances, therefore, Addison's disease may have emerged from a postinfluenzal exhaustion.

Pneumonia is second on the list, but in most instances it appeared as a complication of the influenza. Clinically, tuberculosis appeared to play a minor part; but since tuberculous lesions of the suprarenals were found in all but one of our cases coming to necropsy, it would appear that tuberculosis is frequently overlooked. In certain tuberculous cases, proved by necropsy, tuberculosis could not be positively diagnosed clinically; in some instances tuberculosis has been active only in the suprarenals, and quiescent elsewhere in the body. Syphilis seemed to be directly responsible in one instance, a nitritoid crisis occurring with each arsphenamin treatment, except when it was preceded by a hypodermic injection of epinephrin. The evidence that malaria and typhoid were causative factors was not conclusive. Trauma, associated with great fright, apparently played a part in two cases. In two other cases the symptoms first appeared during pregnancy. In one of these, however, the patient was also the victim of influenza.

From this analysis no new facts are definitely established, but, despite the lack of pathologic and bacteriologic evidence, it is impossible to exclude a causal relationship between influenza and Addison's disease, even though it may not be direct.

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* From the Division of Medicine, Mayo Clinic.

* Read before the Association of American Physicians, Atlantic City, N. J., May 6, 1924.

1. Muirhead, A. L.: An Autograph History of a Case of Addison's Disease, J. A. M. A. 76:652-653 (March 5) 1921.
2. Rowntree, L. G.: Subsequent Course of a Case of Addison's Disease, J. A. M. A. 79:556-557 (Aug. 12) 1922.

COURSE OF THE DISEASE

The onset of Addison's disease is insidious, as a rule. This is true in the present series, as will be seen from Table 2. It is sometimes difficult to determine the nature of the onset from the history, since, not infrequently, the patient will set a date of onset, and assert that it was abrupt, but on closer questioning will recall that weakness, pigmentation or stomach trouble had existed for some months earlier (Table 3).

TABLE 1.—*Sex and Age Incidence in Addison's Disease*

	Total	Series 1	Series 2
Patients	47	26	21
Males	31	15	16
Females	16	11	5
	Average Age at Admission, Years	Maximal Age at Admission, Years	Minimal Age at Admission, Years
Patients	41.9	60	14
Series 1	41.1	60	14
Series 2	42.9	59	20
	Ages According to Decades		
Years	Patients	Group 1	Group 2
10 to 20	1	1	0
21 to 30	6	3	3
31 to 40	10	10	4
41 to 50	13	5	8
51 to 60	15	7	8
61 to 70	1	1	0
	47	26	21

Owing to the insidious onset of the disease, data relative to its duration are necessarily inaccurate. In Addison's original series of eleven cases, the duration was indicated in seven, the average duration being nine months. The most accurate data in this study relate to the twenty-one cases of Series 2. Thirteen of the patients in this series are dead, the average duration of the disease being sixteen and one-half months. The shortest duration was six weeks, and the longest definite history three and one-half years. In two of the earlier histories in Series 1, pigmentation of five to eight years' duration is mentioned, but in an indefinite way. The other addisonian manifestations in these cases were of only short duration.

The data relative to end-results in Series 1 are unsatisfactory, since it was impossible to trace many of the patients. However, such data as we have appear in Table 3.

TABLE 2.—*Incidence of Previous Illnesses in Addison's Disease*

Disease	Total	Series 1	Series 2
Influenza	27	12	15 (27)
Pneumonia	12	3	9
Tuberculosis (direct or indirect evidence)	8	4	4
Syphilis	3	1	2
Malaria	4	3	1
Typhoid fever	3	3	0
Trauma	2	2	0
Pregnancy	2	1	1
Nature of Onset			
Insidious	35	18	17
Sudden	12	4	8

SYMPTOMS

The incidence of the various symptoms is indicated in Table 3. Asthenia and pigmentation were present in every case, though in varying degrees. These two symptoms and hypotension were utilized as criteria in making the diagnosis. In the majority of cases, both asthenia and pigmentation were marked Grade 2, 3 or 4, on a scale of 1 to 4. They tended to run more or less parallel, although occasionally weakness was quite marked before the pigmentation was striking, while in other instances, pigmentation of severe type persisted for years prior to the onset of marked weakness. Obviously, the exact nature of the early pigmentation in these cases is uncertain. In Series 2, the onset of this symptom was gradual in fourteen cases, and rapid in five. Since this is the only group in which personal observations were possible, it will constitute the basis of my report. The pigmentation was graded 4 in two patients, 3 in ten, 2 in six, 1 in three, and in all cases it was progressive prior to treatment. Two patients with prolonged pigmentation stated that it cleared up somewhat in winter, and two others that it was less during the periods of rest, and when under the influence of treatment, tonics, and so forth. These statements are of interest, since the pigmentation of some of the patients has diminished strikingly under specific organotherapy. The distribution of pigmentation, in general, was that outlined originally by Addison.[3] Thirteen patients had pigmentation of the mucous membranes of the mouth, lips, cheeks or palate, that of the lips as a rule being most marked.

Loss of weight was considered a cardinal symptom by Addison. The average loss of weight in the twenty-one cases of Series 2 was 32 pounds (14.5 kg.), and in the nineteen cases of Series 1 in which it was recorded, 26 pounds (12 kg.). As the flesh is usually firm to the touch and the skin soft and free from folding and wrinkling, the loss of weight may readily be overlooked unless inquired into especially. The skin retains its elasticity and apparently adapts itself to the shrinkage of the body. The greatest loss in any individual case was 67 pounds (30 kg.); six patients lost 50 pounds (23 kg.) or more.

TABLE 3.—*Course and End-Results*

	Total	Series 1	Series 2
Progressive course prior to admission	39	18	21
Stationary course prior to admission	7	7	0
Deaths	39	26	13
Patients known to be living	7	0	7
	Incidence of Symptoms		
Symptoms	Total	Series 1	Series 2
Asthenia	47	26	21
Pigmentation	47	26	21
Loss of weight	42	23	19
Constipation	25	13	12
Vomiting	26	16	10
Nausea	29	22	7
Anorexia	25	23	2
Pain (abdominal or lumbar)	27	13	14
Diarrhea	8	3	5
Belching	7	5	2
Bloating	9	3	6
Cough	13	7	6
Dyspnea on exertion	20	5	15
Syncope or collapse	4	1	3

As the flesh is usually firm to the touch and the skin soft and free from folding and wrinkling, the loss of weight may readily be overlooked unless inquired into especially. The skin retains its elasticity and apparently adapts itself to the shrinkage of the body. The greatest loss in any individual case was 67 pounds (30 kg.); six patients lost 50 pounds (23 kg.) or more.

Gastro-intestinal complaints of one kind or another were present in practically all cases. Anorexia, nausea and vomiting were common, and in all probability were directly responsible for the loss of weight. Nausea and vomiting assume prognostic significance at times, since in the terminal stage of the disease they often persist despite all efforts to bring them under control. Of the other gastro-intestinal symptoms, constipation is common, but is often interrupted by marked diarrhea for two or three days. Belching and bloating are also present at times.

Pain is not usually described as a symptom of Addison's disease, but a considerable number of patients

3. Addison, Thomas: A Collection of the Published Writings of the Late Thomas Addison, Physician to Guy's Hospital, London, the New Sydenham Society, 1868.

complained of vague, dull, deep aching pain in the epigastrium, lumbar region or flanks. This may be unilateral or bilateral, and possibly may be suprarenal in origin.

Pain resembling angina pectoris is sometimes present, in spite of the low blood pressure; this was a striking feature in Dr. Muirhead's illness.

Dyspnea, collapse and syncope are probably related to the feeble cardiac action and low blood pressure. Such symptoms are much more pronounced throughout in certain cases than in others, and, as a rule, are likely to be more marked toward the end of the disease.

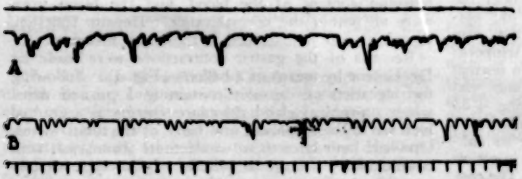

Fig. 1.—Biot's type of respiration: *A*, suggestive; *B*, typical; time marker, fifteen seconds.

Shock, or a condition closely resembling it, has been observed in several of our cases. The patient is usually conscious, has a low temperature and an extremely low blood pressure, and the flesh feels cold to touch. There may be blood concentration, as evidenced by decreased water content in the blood, and increased difficulty in obtaining venous blood. This condition of shock was so striking as to demand special treatment in at least four patients. In two instances, gum acacia solution was infused, and in the others, heat, rest, forced fluids and stimulants were employed. The blood sugar of one patient, during the shock period, was 0.045 per cent.

On clinical examination the pulse rate was between 70 and 100, and weak and compressible, but regular. The blood pressure was consistently low, usually more so in the early morning; it showed a tendency to rise during the day, under moderate exercise (Table 4).

The heart action was feeble usually, and the apex beat difficult to locate. On auscultation, the sounds were uniformly distant and feeble, and could be heard somewhat better with the ear than with the stethoscope.

The respirations were extremely interesting in some cases, especially during the shocklike periods. In one case, they were markedly decreased, nine each minute, irregular in character and interrupted by frequent sighs. Interesting tracings were obtained in two cases (Fig. 1). In one, a pneumographic tracing was taken and proved to be similar or identical to the tracing of Biot [4] and to those published later by Conner.[5] The tracing on the second case was somewhat similar, but not identical. Biot differentiates this type of breathing from Cheyne-Stokes breathing, especially "in that before and after the pause there are no respiratory movements of a gradually increasing and diminishing sort, but instead a respiration which is usually deep and dyspneic, corresponding to a deep sigh, made by the patient at such times." So far as I am aware, these are the only instances recorded of this type of breathing in cases other than those in which there is meningitis or other intracranial lesions. In both cases, a moderate acidosis was present. The first patient has improved markedly under treatment. The second responded slightly at first, but nausea, and vomiting with extreme hypotension and asthenia continued until death. No suggestion of meningitis existed in either case. In both instances, acidosis was suspected on clinical grounds, and determination of the carbon dioxid capacity of the plasma revealed, respectively, 31 and 36 per cent. by volume.

The skin was soft, often cool, free from wrinkling, and of a fine texture, as noted by Addison. It lacked dryness and the feeling of detachment from the underlying tissue so frequently encountered in marked emaciation. The flesh, generally speaking, felt firm. In many instances, the flesh felt cool to the examining fingers, although the patient's temperature was normal. The finger nails frequently exhibited a peculiar, fine, criss-cross ridging, or fenestration.

THE RESULTS OF LABORATORY STUDIES

The laboratory studies may be summarized briefly. The urine was approximately normal in amount, so long as fluids by mouth were retained. Occasionally hyaline casts were seen, and white blood cells and traces of albumin, but the urine was consistently sugar free. The specific gravity varied from 1.011 to 1.035, and the reaction was consistently acid.

Renal function studies were made in twelve cases, in Series 2. The blood urea was 30 mg. or more for each 100 c.c. in ten; 50 mg. or more in four, and between 90 and 100 mg. in two. Each of the last two patients appeared to be moribund at the time the determination was made, but the increase in blood urea remained unexplained. In one, a fatal case, the increase in blood urea persisted, but in the other patient it dropped quickly, as the patient improved, and it became normal within a week. In four cases, the uric acid was increased above 4 mg. for each 100 c.c.; the highest value, 6.9 mg., occurring in a case complicated by gout. The creatinin was normal in seven cases, and the phenolsulphonephthalein excretion normal in all save two. Water tests indicated poor excretion (Table 5). The explanation for diminished renal function is not clear. However, since organic pathologic evidence is usually lacking, diminished function is probably an accompaniment of the low blood pressure and the resulting circulatory disturbance. Experimental work bearing on this subject is contemplated.

TABLE 4.—*Average and Extremes of Blood Pressure in Addison's Disease*

	Total	Series 1	Series 2
Average systolic	89	89	89
Average diastolic	64	62	66
Maximal systolic	184	184	115
Minimal systolic	60	62	60
Maximal diastolic	92	92	82
Minimal diastolic	40	40	40

The fasting blood sugar determined on admission was below normal in nine cases, the average being 75 mg. for each 100 c.c., and the highest being 100 mg. However, it reached the extremely low level of 45 mg. in two cases, in one on admission, and in the other, one hour subsequent to a levulose tolerance test.

Gastric contents were studied in nine cases of Series 2. In five of these, achlorhydria was present. The total and free acids were low in every instance, the highest total acid being 34, and the highest free acid 22.

4. Biot, C.: Contribution a l'étude du phénomène respiratoire de Cheyne-Stokes, Lyon méd. **82**: 517-561, 1876.
5. Conner, L. A.: Biot's Breathing, Am. J. M. Sc. **141**: 350-360, 1911.

Roentgen-ray examination of the chest disclosed evidences of tuberculosis in four cases.

Basal metabolic tests were carried out in thirteen cases, eight falling within normal limits. One patient, suffering from active pulmonary tuberculosis, had an increased rate, +20, and four had decreased rates, —30, —20, —13 and —10, respectively. It was thought that anorexia and the low state of nutrition might partially explain the latter values. Under the influence of epinephrin, the rate increased temporarily, as in normal persons, one patient reaching +35 within one-half hour after its subcutaneous injection (Fig. 2). The cost of work was determined in several instances in the metabolic laboratory. The results indicate that the number of calories for each kilogrammeter fell approximately within normal limits (Table 6).

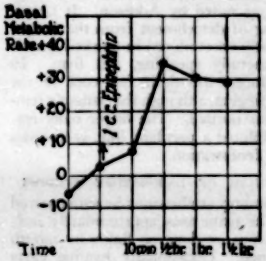

Fig. 2.—Calorigenic effect of epinephrin in advanced Addison's disease.

In this group of cases, anemia was infrequent, although a cardinal symptom according to Addison. The average values for hemoglobin (Dare), erythrocytes and leukocytes are indicated in Table 7. The average values for the two series of cases are strikingly similar. In sixteen of the twenty-one cases of Series 1, the hemoglobin was within normal limits; in eighteen the erythrocytes numbered more than 4,000,000, and in fourteen the leukocytes were within normal limits. The only patient with definite anemia was a woman with a hemoglobin of 57 per cent. (Dare), erythrocytes 3,750,000, and a normal leukocyte count. Leukocytosis was encountered in only five cases, the highest count being 17,000, active tuberculosis existing as a complication. Leukopenia was encountered in one instance.

Differential counts were made in fourteen cases of Series 2, nine showing a definite lymphocytosis, reaching 50 per cent. or more in four cases. The polymorphonuclear cells were decreased proportionately.

Blood volume determinations were made in ten cases by Dr. Brown and Miss Roth[6] (Table 8), the values falling within normal limits in every case. In one case, in which the patient was in a condition of shock, a decreased water content of the blood was found, although the blood and plasma volumes were still within normal limits. Because of the critical condition of the patients during the period of shock, further studies of blood volumes were considered unjustifiable; hence, detailed studies of the blood in this condition are lacking.

TABLE 5.—*Water Test in Three Cases*

Case	Time 8:10	8:30	9:00	9:30	10:00	10:30	11:00	11:30	12:00	Total Intake, C.c.	Total Output, C.c.
1	18	12	20	20	18	20	30	32		2,000	170
2	21	14	15	10	12	16	21	35		1,200	150
3	25	58	130	112	95	65	60	120		1,000	625

6. Brown, G. E., and Roth, Grace: Volume and Composition of the Blood in Addison's Disease, Am. J. M. Sc. 169:47 (Jan.) 1925.

Electrocardiograms have been taken in a considerable number of cases and have shown little of interest or value. Sinus arrhythmia and sinus tachycardia are the most common deviations from normal. Aberrant Q-R-S complexes in isolated leads were encountered occasionally, and in one instance notched Q-R-S complexes were present in all leads. This patient suffered clinically from low-pressure angina.

Studies on the function of the liver were carried out with Dr. Greene in one mild and in one severe case (Table 9). The phenoltetrachlorphthalein excretion, with Rosenthal's technic, the levulose tolerance test, the bilirubin content of the blood, and the blood urea, were all within the normal range. Hepatic function, therefore, was undisturbed in these two instances.

Records of the gastric contractions were made by Dr. Greene by means of a balloon (Fig. 3). Following the ingestion of capsules containing 1 gm. of dried whole suprarenal gland substance, there was a gradual increase in the amplitude and force of the tonus waves. One-half hour later there was definite stimulation with contractions of large amplitude of the type usually called "hunger contractions." These contraction waves were associated with epigastric pain similar to that observed clinically. Epinephrin by mouth and the dried suprarenal cortex did not cause an increase in the gastric contractions. Following the preparation of dried suprarenal medulla, however, contraction waves and abdominal pain were observed, apparently identical with those produced by the whole gland. Clinically, we have found that the cortex is less likely to produce these symptoms than the whole gland, although at times the cortex also seemed to be responsible for abdominal cramps and pains. Further observation along these lines is desirable.

TABLE 6.—*Two Determinations of the Cost of Work in a Case of Addison's Disease*

	Time	Pulse	Blood Pressure: Systolic	Blood Pressure: Diastolic	Cost of Work
Patient up	8:10	86	90	70	
After twenty minutes in bed	9:20	84	94	80	1.34 calories for each kilogrammeter; normal, 1.35
After dressing and walking	9:45	98	110	90	
After ten minutes on treadmill	10:00	74	112	90	
Breakfast and motor ride	10:45	78	108	78	
Patient up	8:10	69	92	68	
In bed five minutes	.....	69	98	80	
In bed twenty minutes	.....	64	98	80	1.39 calories for each kilogrammeter; normal, 1.35
After dressing and walking	.....	78	104	90	
After ten minutes on treadmill	.....	65	108	90	
Motor ride (standing, waiting, and so forth)	.....	72	102	68	

Five Determinations of the Cost of Work in Two Cases of Addison's Disease:

Case 1: 0.89 net gram calories for each horizontal kilogrammeter; 0.95 net gram calories for each horizontal kilogrammeter

Case 2: 1.34 net gram calories for each horizontal kilogrammeter; 1.39 net gram calories for each horizontal kilogrammeter; 1.07 net gram calories for each horizontal kilogrammeter

A STUDY OF PIGMENTATION BY MEANS OF A TINTOMETER

Early in the investigation of these patients, it became apparent that the study of color changes was beset with many difficulties, chiefly because in the skin we are dealing not with simple colors but with mixed or complex colors in which red, blue and brown participate in varying degree, and because the colors are not constant over long periods of time. Careful observation discloses the fact that the color of the skin is almost constantly undergoing minor changes in response to

heat, cold, posture, exercise, rest, exposure, sunshine, and vasomoter and nervous influences. The changes resulting from exposure to sunshine have long been known and appreciated, but the minor changes incident to these other influences have not received sufficient consideration. It was evident from the cases in this study that a standard of comparison would greatly facilitate studies of color change.

TABLE 7.—*Average Blood Counts in Addison's Disease*

	Total per Cent.	Cases	Series 1 Per Cent.	Cases	Series 2 Per Cent.	Cases
Hemoglobin (Dare).....	72+	42	72+	24	72+	19
Erythrocytes.....	4,000,000	41	4,000,000	24	4,000,000	17
Leukocytes.....	8,000	41	8,000	24	8,000	17

The only feasible method of studying color changes of the skin involved reproduction by the artist of the color actually encountered under these varying conditions. Consequently, this was undertaken by the art department, and from time to time, under constant conditions, exact reproductions were made of the colors in various areas of the body in from twelve to fifteen cases of Addison's disease. As a result we have accumulated a considerable number of color patches and have been able to analyze, in part, at least, the nature and extent of such color changes. In determining the effect of the Muirhead regimen on the pigmentation, it is necessary to make repeated observations of the same areas and to control, so far as possible, the influence of other factors. For the purpose of studying the pigmentation of the exposed areas, the middle of the forehead, the neck just below and behind the ear, and the back of the hand were selected; and of the unexposed parts, the area of the chest situated just below the clavicle anteriorly, or in the interscapular space posteriorly.

It soon became evident that striking changes in the color of the skin do occur as a result of treatment. In order to determine these changes more readily, the various patches of color have been assembled and compared. In conjunction with Dr. Brown, a tintometer has been developed, consisting of ten color blocks arranged in a series with an average admixture of red and with increasing amounts of brown, from an arbitrarily selected normal to the deepest brown encountered. These colors have all been analyzed by the Munsell system. The tintometer has proved very useful in following quantitatively the degrees of pigmentation.

NECROPSIES

Necropsies were obtained in eight cases, and the pathologic involvement of the suprarenals and kidneys was confirmed at operation in another instance. It is rather significant that of the nine cases coming to necropsy, tuberculous lesions were found in eight; in the other case, the process was one of high grade atrophy (Table 10). Details of diagnoses will not be discussed here; however, biopsies were resorted to in several instances, especially when hemochromatosis was also under consideration.

PROGNOSIS

The prognosis depends on the nature of the underlying disease and on the patient's tolerance and response to suprarenal products. Obviously, the specific treatment is of value only by way of substitution, or as complementary treatment. The outlook is extremely grave. Irrespective of the amount and the intensity of the treatment, in about two thirds of the cases, a fatal outcome resulted within a period of one year.

TREATMENT

In presenting the results of the treatment of Addison's disease, one should recall the restraint and conservatism that characterized Addison's original description of the disease. We hope that we have avoided "hasty pretensions," "partial and prejudiced observations" and "overstatement of facts" which, according to him, should "merit the just rebuke of those possessing a sounder or more dispassionate judgment." I feel, however, that this series of cases is sufficiently large, and the results of the Muirhead regimen sufficiently good to warrant a report at this time, in the hope that the treatment may at least be accorded a more extensive clinical trial.

The principle of the treatment is the frequent administration of epinephrin hypodermically and by rectum, and of whole gland or suprarenal cortex by mouth to the point of tolerance. This involves the determination

TABLE 8.—*Blood and Plasma Volumes in Addison's Disease*

Case	Age	Sex*	Weight, Kg.	Height, Cm.	Surface Area, Sq. M.	Blood Volume: Total C.c.	Blood Volume: C.c. for Each Kg.	Blood Volume: C.c. for Each Sq. M.	Plasma Volume: Total C.c.	Plasma Volume: C.c. for Each Kg.	Plasma Volume: C.c. for Each Sq. M.	Hematocrit Cells, per Cent.	Hemoglobin, per Cent. (Palmer)	Date
1	28	♂	62	177	1.70	6,340	102	3,730	2,820	37	1,670	42	102	.....
2	22	♀	51	165	1.50	4,560	91	3,040	2,280	45	1,520	50	94, 72	.....
4	29	♀	53	163	1.53	4,710	91	3,100	2,600	51	1,690	39	111	5/ 3/23
			54	163	1.57	5,060	91	3,220	2,600	47	1,660	48	105	9/ 1/23
			54	162	1.54	4,920	87	3,190	2,600	46	1,690	47	113	2/23/24
5	46	♀	59	170	1.67	5,080	79	3,040	2,740	46	1,640	39	105	.....
6	29	♀	59	164	1.62	5,060	75	3,120	2,320	39	1,430	37	92	.....
7	32	♀	52	170	1.71	4,660	77	2,940	2,280	43	1,430	42	115	.....
8	37	♀	60	173	1.75	5,570	101	3,180	2,760	46	1,580	39	97	6/ 5/23
			60	173	1.75	4,970	83	2,840	2,280	38	1,300	35	110	6/ 5/24
9	21	♀	55	172	1.70	5,320	96	3,130	2,340	43	1,370	41	104, 111	.....
10	34	♀	50	170	1.65	4,760	95	2,880	2,340	46	1,420	32	103	.....
Average	47		57	170	1.70	4,997	88	3,126	2,510	44	1,529	42	105	

* In this column, ♂ indicates male; ♀, female.

TABLE 9.—*Function of the Liver in Addison's Disease*

Case	Phenoltetrachlorphthalein, per Cent., Retention in Serum: 15 Min.	One Hr.	Two Hr.	In Urine	Blood Sugar 50 Gm. by Mouth: Fasting	One Hr.	Two Hr.	Bilirubin of Blood, Mg. for Each 100 C.c.	Blood Urea, Mg. for Each 100 C.c.	Severity of Addison's Disease
11.....	5	2	1	0.5	105	75	94	0.7	34	Mild
12.....	4	2	0	Trace	78	91	84	0.7	33	Grave
Maximal normal values	7	3	0	0.5	—	130	—	0.5-2.0	15-25	

of tolerance, which varies widely in each individual case. Once established, it becomes an index to dosage, although the tolerance of the same patient may also vary somewhat from time to time. The untoward results of epinephrin hypodermically are a feeling of general weakness and tremor, palpitation or pounding of the heart; by rectal injection, tenesmus; and those of whole gland or cortex by mouth are gastric or abdominal distress, nausea, vomiting and intestinal cramps.

Other therapeutic factors, such as rest, exercise, diet, outdoor life and sunshine, merit consideration. During most frequent in the early morning hours; consequently, the breakfasts should be simple in form and easily digestible. Acidosis is commonly associated with shock and is best controlled with alkalis, preferably sodium bicarbonate. Continuous nausea and vomiting become most distressing at times, and may resist all local and general sedative measures. Withdrawal of all food by mouth for twenty-four hours, and moderate doses of codein and chloral may prove effective. Glucose intravenously has been used repeatedly in such crises (up to 600 c.c. of a 10 per cent. solution administered slowly). Cardiac support is called for at times, digi-

TABLE 10.—*Necropsies in Cases of Addison's Disease*

Case	Age	Duration of Disease	Clinical Diagnosis	Response to Treatment	Terminal Picture	Findings
13	31	2 years	Addison's disease, cardiovascular failure, terminal pericarditis, pleurisy	Slight at first to full treatment	Pain in chest, restlessness, temperature 103.3, circulatory collapse	Atrophy 3 of suprarenal glands; pigmentation 2 of skin and mucous membranes; pericarditis; passive congestion of liver, spleen and kidney; old healed tuberculous pleuritis and lymphadenitis
7	52	2 years	Chronic pulmonary tuberculosis, Addison's disease	Very slight; not full treatment	Shock, low blood pressure, high hemoglobin, anemia, death	Chronic caseous tuberculosis; chronic pulmonary tuberculosis; pleuritis; lymphadenitis; perinephritis of left inguinal region
14	40	6 weeks	Addison's disease	No response; not full treatment	Uncontrollable vomiting, asthenia, moribund on entrance	Chronic pulmonary tuberculosis with cavity formation; ossified empyema on the right; bilateral obliterative pleuritis
15	41	.....	Addison's disease, Lambliа intestinalis, old pulmonary tuberculosis	Not full treatment	Died in shock.....	Tuberculosis of suprarenals; ulceration of small intestine, myocardial degeneration
16	32	4 months	Addison's disease, tuberculosis of suprarenals and left kidney	No organotherapy	Circulatory collapse, unconsciousness	Tuberculosis of left kidney with abscesses recognized during removal of kidney; no necropsy
17	42	1 year	Addison's disease, bilateral tuberculosis of suprarenals, tuberculosis of right kidney, chronic myocarditis	No organotherapy	Asthenia, restlessness, nausea, vomiting	Tuberculosis of suprarenals; tuberculosis of right kidney; chronic myocarditis
18	54	3 years	Lumbar abscess, perinephritis, Addison's disease	No organotherapy	Perinephritic abscess.....	Fibrocaseous tuberculosis of suprarenals with obliteration; abscess of left suprarenal with fistula to descending colon; cholecystitis; perihepatitis; double pleuritis; healed bilateral tuberculous lesions
19	35	3 months	Marked fibrocaseous tuberculosis of right suprarenal, recent cholecystostomy, healed duodenal ulcer, cirrhosis of liver	No organotherapy	Gallstones, generalized tuberculosis	Tuberculosis of right suprarenal; hyperemia of left suprarenal; marked fibrocaseous tuberculosis of right kidney; subdiaphragmatic tuberculous abscess; hepatic tuberculosis; pulmonary tuberculosis; pneumonia; tuberculosis of myocardium of right ventricle; recent cholecystostomy
20	20	3 months	Addison's disease, purulent pericarditis, bilateral bronchopneumonia	No organotherapy	Nausea, vomiting, hypotension	Chronic caseous tuberculosis of suprarenal glands, acute fibrinopurulent pericarditis; bilateral bronchopneumonia

TABLE 11.—*Notable Improvement of Five Patients with Addison's Disease on Muirhead Treatment*

Case	Age, Years	Pigmentation of Skin and Mucous Membrane, Grade	Asthenia, Grade	Change in Weight, Kg.	Blood Pressure Systolic	Blood Pressure Diastolic	Severity of Disease Grade	Duration, Months	Comment
1.	26	2 2	3	−16	94	60	3	6	Patient had had duodenal ulcer at first; is practically well;
21 months later..	..	1 1	1	+26	134	80	17	27	works regularly
2.	38	4 3	3	−15	90	70	4	22	Condition critical; dark as a negro; drives locomotive six
20 months later..	..	1+ 2	1	+ 7	7	7	1	42	days in week; much better in color, much stronger
3.	30	2 3	3	−23	82	55	2+	18	Syphilis of central nervous system; nitritoid reactions to
26 months later..	..	1 1	2	+10	90	55	1	44	arsphenamin makes epinephrin is used concomitantly;
					110	85			strikingly better after twenty-five months
4.	50	3 3	3	−13	112	90	3	4	Dressing six years; acute course of tuberculous adenitis
13 months later..	..	7 7	1	+ 6.5	110	95	1	17	for four months; the patient, a farmer, does most of
					80	65			his own work; greatly improved
5.	42	2+ 2	2	− 7	90	60	2	24	Patient feels better than in last eight years; works nine
					105	80			hours a day; plays eighteen holes of golf without
17 months later..	..	1 1	0	+ 7	105	60	1	41	fatigue; trouble only with discontinuance of treatment
					120	80			

the advanced stage and especially during shock, rest in bed should be absolute, and artificial heat is indicated. In stronger patients, moderate exercise, fresh air and sunshine are desirable. Because of the low level of the blood sugar, the diet should be rich in carbohydrates, with feedings at regular and frequent intervals. Long periods of fasting result in exacerbation of weakness; consequently, fruit juices and milk are advocated between meals, and during the night one serving of milk or fruit juice. A small dose of epinephrin is given by proctoclysis during the early morning hours to patients extremely ill. Nausea is talis and nux vomica being used to advantage during periods of profound cardiac weakness. Other stimulants should be used during collapse, black coffee often being of considerable value.

The results of treatment depend to a certain extent on the degree of tolerance which, inexplicably, varies greatly. Patients in the earlier stages, as a rule, tolerate large doses of epinephrin, from 5 to 10 minims (0.3 to 0.6 c.c.) or even 15 minims (0.9 c.c.), three times a day, hypodermically; from 5 to 10 minims rectally, and from 5 to 10 grains (0.3 to 0.65 gm.) of whole gland or cortex by mouth three times a day. The

greatest difficulty in long continued treatment, in our experience, comes from the whole gland by mouth, many patients writing that they find grave difficulty in continuing its use. Because of intestinal cramps and digestive disturbances, it is preferable to administer it after meals and on a full stomach. Even with these precautions, it occasionally becomes necessary to interrupt the treatment temporarily or to reduce the dosage from time to time. The cortex is more satisfactory and apparently equally effective. An important question has arisen in relation to tolerance; namely, whether or not an intolerance for suprarenal products of all kinds exists in the more acute and critical stages of the disease. Recently, during my absence from the clinic, my colleagues, Drs. Keith and Brown, felt that the treatment had resulted in actual harm rather than good in two cases, although both had witnessed unquestionable improvement in several other cases under this regimen. Therefore, specific organotherapy was withheld for two days from two recent patients, who were in a very critical condition on admission; then the drug was started in small doses, and gradually increased. The first patient showed no intolerance, and reacted quite favorably, improving markedly within from forty-eight to seventy-two hours. The second was extremely uncomfortable before treatment, having marked anorexia, nausea and almost continuous vomiting. Moderate improvement was apparent at the end of one week, followed subsequently by relapse, and death inside of three weeks.

Little can be said concerning the results of treatment in the cases of Series 1. Most of the patients received no organotherapy; their treatment was symptomatic, and consisted largely of gastric sedatives and circulatory tonics and stimulants. Two received 0.6 c.c. of epinephrin three times a day, but, as it was administered by mouth, it probably exerted little or no influence.

The twenty-one patients in Series 2 may be considered in three groups: (1) those receiving no organotherapy; (2) those receiving some form of specific glandular therapy, but not a full Muirhead regimen, and (3) those who were placed on the Muirhead regimen. All four patients in the first group died within three or four months. Four of those in the second group died within a few months, and the fifth, who received 0.66 gm. of whole gland by mouth three times a day, and 1 c.c. of epinephrin in 1:1,000 solution daily by rectum, lived sixteen months.

Of the twelve patients on the Muirhead regimen, five are dead and seven living. Of those dead, two died within two to four weeks of admission. In both instances a shocklike condition existed, and the patients did so poorly under treatment that the question of intolerance or hypersensitiveness to organotherapy was raised. Nausea and vomiting and abdominal cramps were marked and serious. Terminal pericarditis and pleurisy developed in one instance. One of these two patients had been placed on a regimen involving organotherapy by Dr. Sachs of Omaha, six months before coming to the clinic. Improvement had been striking at first. A third patient lived approximately two months. Her tolerance for treatment appeared low, yet she improved considerably. Unfortunately, she exhausted her supply of suprarenal preparations, suddenly went into collapse, and was brought back to Rochester in deep coma. After two days of organotherapy, she returned to consciousness for approximately twenty-four hours. Death in coma and collapse followed shortly after. Two other patients of this group improved definitely following the treatment. One, Dr. Muirhead, had excellent results for a period of six months, and wrote most enthusiastically of his condition. The terminal events I have previously described. The other patient lived seven and one-half months from the beginning of the treatment. She improved considerably and returned to Rochester after four months, definitely better, but still suffering from unquestionable Addison's disease of advanced grade. Her tolerance for suprarenal preparations was moderate. She died at home about three months later; the home physician wrote that the terminal picture was one of basilar meningitis.

Seven patients are still living, two of whom have been under observation for periods too short to justify a report at this time. Notable results were obtained in five instances (Table 1). Three of the cases were demonstrated at a staff meeting of the Mayo Clinic in September, 1922, and constituted the basis of a subsequent clinical report.[7] These three patients are living, are in excellent health, in view of the circumstances, and are continuing treatment after the lapse of from twenty to twenty-six months. The two other

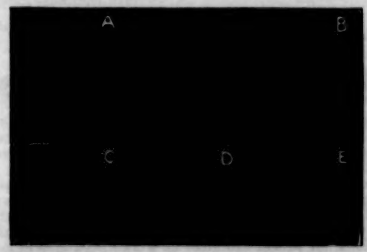

Fig. 3.—Record of gastric contractions made by means of a balloon: *A*, normal; *B*, suprarenal whole gland, 1 gm., after one-half hour; *C*, normal; *D*, suprarenal cortex, 1 gm., after one hour; *E*, suprarenal medulla after three-fourths hour.

patients continue to improve after thirteen and nineteen months, respectively. Short clinical records of each of the five cases follow, and further data are given in Table 2

REPORT OF CASES

Case 1.—A clerk, aged 26, came to the clinic, Aug. 10, 1922, remaining for a period of three weeks. He had developed a peptic ulcer in 1921, and had severe abdominal pains followed by hematemesis and melena. Pigmentation was first noticed in February, 1922, and was associated with marked weakness and a loss of weight of 16 kg. Blood pressure on admission was 94 systolic and 60 diastolic, but later decreased to 90 systolic and 50 diastolic. The pigmentation was typical in distribution and was graded 2, and the severity of the Addison's disease itself, 3. The patient was placed on epinephrin, 1 c.c. of a 1:1,000 solution three times a day, hypodermically, 1 c.c. three times a day rectally, and 0.5 gm. of desiccated whole gland three times a day by mouth. He improved remarkably during his stay in Rochester, and was dismissed from observation with a systolic blood pressure of 130, and diastolic of 80. A letter dated March 28, 1924, contains the following: "My color is good; pigmentation on my hands, neck and behind the ears is all gone. The spot on my gums can be seen by looking close. My groin is still dark, but not so much as it was when you last saw me. My appetite is extra good. I sleep well and am rested when I get up. I

7. Rowntree, L. G.: The Treatment of Three Cases of Chronic Addison's Disease, M. Clin. N. Am. 7:177-187 (July) 1923.

can lift as much as ever, and my wind is better than it has been since I quit school. I weigh 154 pounds [70 kg.] in my shirt sleeves. Weighed 119 pounds [54 kg.] the first time you saw me. There is one thing that has been brought to my attention very forcibly, and that is the effect of smoking on my color. I quit for about one year, then I smoked a cigar after supper and the next morning I was two or three shades darker. I did not smoke again for a day or so until the color

Fig. 4 (Case 3).—Striking pigmentation of the tongue; on treatment, this practically disappeared.

got back to normal. Then I tried it again with the same results, only the color changed quicker by several hours. Needless to say, cigars are off my list."

Case 2.—A locomotive engineer, aged 53, came to the clinic, Sept. 4, 1922, because of extreme pigmentation and marked weakness. He had been ill twenty-two months and presented a typical picture of advanced Addison's disease, the skin appearing as dark as that of a dark negro. The pigmentation was graded 4, and the severity of the disease 4. The systolic blood pressure was 80, and the diastolic 58. The pigmentation was marked in the buccal mucous membrane. Because of weakness, the patient had given up work fifteen months earlier, had returned to work four months later for from eight to ten days a month, but for six weeks had been entirely incapacitated. In fact, his condition was so critical that the clinical examiner noted on the history sheet that "unless Wassermann reaction is positive, ought not to be held here, as condition is in an advanced stage." Under the Muirhead regimen, the improvement within two weeks was almost unbelievable. Numerous letters have been received during the twenty months indicating that there has been continued improvement. March 23, 1924, he reported as follows: "Yours of 11th at hand. Will try to answer. I am still improving some, but slow. When I left there I weighed 110 pounds [50 kg.]. I weigh 125 pounds [56.7 kg.] now. I eat good and sleep fair. My color is lots better, everybody tells me; I take the epinephrin yet, from 15 to 20 drops in water. The capsule hurt my stomach. . . . I work six days a week."

Case 3.—A salesman, aged 30, reported at the clinic, April 3, 1922, with syphilis of the central nervous system, unequal pupils, inactive knee jerks, positive Wassermann blood and spinal fluid reaction, a peculiar amber colored pigmentation, and a marked bluish-brown discoloration on the tongue, the size of a nickel. The loss of weight had been more than 50 pounds (23 kg.). The blood pressure, as first recorded, was 100 systolic and 70 diastolic, but later was 78 systolic and 55 diastolic. Symptoms had been present one and one-half years, dating from an attack of influenza. Treatment for syphilis was started, but after each injection of arsphenamin the patient had an exacerbation of his addisonian manifestations, with a condition resembling shock, low blood pressure, marked nausea and vomiting, and collapse. Epinephrin, 0.5 c.c. of 1:1,000 solution, entirely prevented this reaction to all subsequent arsphenamin injections. This patient has returned to the clinic repeatedly and has continued the organotherapy because he cannot get along without it. After the lapse of two years he appears almost well, so far as the Addison's disease is concerned. He still has weakness, Grade 1, pigmentation, Grade 2, and a blood pressure of 90 to 110 systolic, and 55 to 88 diastolic. The pigmentation is strikingly less, and the patch on the mouth has practically disappeared. He has gained 10 kg. in weight, and is still under treatment for syphilis (Fig. 4).

Case 4.—A farmer, aged 50, had had rather dark skin for five or six years. He had had influenza four months before coming to the clinic, and had remained weak and exhausted, with marked pigmentation of the skin and mucous membranes, Grade 3. Within one week of beginning treatment, improvement was striking; the patient said that he was now "ready for a wrestling match." After two weeks he returned home on treatment, with from 30 to 75 per cent. of normal efficiency, and looked after his farm work. About one year later he returned with enlarged cervical glands which, on biopsy, proved to be tuberculous. The pigmentation had definitely decreased, and his general condition was excellent as compared with his condition on first admission.

Case 5.—A business man, aged 42, had developed influenza four years before admission, and had been unconscious for four days. His recovery had been complete. Two years before, he had begun to notice a tiredness, loss of "pep," strength and interest in business, and that he was becoming dark and the skin pigmented. These symptoms became progressively worse and his condition was eventually diagnosed Addison's disease by his local physician, who gave him whole gland by mouth and told him that the disease was incurable. On admission to the clinic, the condition was typical of a moderately advanced Addison's disease. A full Muirhead regimen resulted in immediate improvement, which has been permanent. The patient remained two weeks on his first visit and has returned on two occasions for reexaminations, but feels that he is, practically speaking, normal, provided he continues treatment. On two occasions, he omitted regular treatment for from four days to a week, and on one occasion developed a condition which he thought resembled coma. Treatment was resumed with immediate return to normal. He now works from eight to nine hours a day, six days a week, and occasionally plays eighteen holes of golf without tiring. He states that he is well, although the pigmentation is still unmistakable.

COMMENT

In this report, emphasis has been placed on the improvement accruing under forced organotherapy. The results have certainly exceeded our expectations

Fig. 5.—Pigmentation of the lips in a case of Addison's disease.

in several instances. On the other hand, despite our most thoughtful and continuous efforts, five of the twelve patients died under treatment. The prognosis in Addison's disease is extremely grave. Only in a certain proportion of the cases can marked or lasting improvement be expected or obtained. At best, the treatment can only combat functional insufficiency of the suprarenal glands. If this is the outstanding factor in the disease, a form of substitution or complementary treatment may prove of decided value. The treatment

probably exerts no influence on the fundamental pathologic processes underlying the addisonian manifestations. Since nothing better is available, the Muirhead treatment should be given a fair trial in every case of Addison's disease, care being exercised, however, to see that the patient's individual tolerance is determined and given due consideration, and that simultaneously every measure is utilized in combatting the associated symptoms and the underlying pathologic process (Fig. 5).

THE HEREDITY OF COMPLETE RECTAL PROLAPSE*

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Many explanations have been offered for the occurrence of rectal prolapse; not one is entirely satisfactory. All recent views tend to classify the condition as a true abdominal hernia and to seek the cause in a congenital anatomic defect.

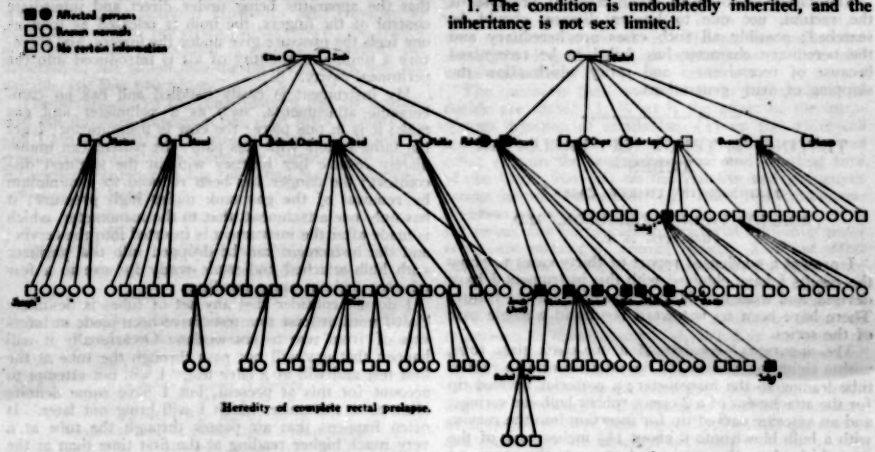
So far as we have been able to find, there has been no observation that prolapse was a hereditary defect. In a family which has accidentally come to our attention, the heredity of this condition is unmistakable. The study of this family throws an interesting light on the occurrence of rectal prolapse in other cases, and perhaps indirectly on that of other varieties of hernia.

The first member of this family to be seen by us (Joseph in the accompanying chart) came to the outpatient department for an irrelevant complaint, and the prolapse was discovered in the course of physical examination. He stated that he had had it since infancy, and that it always protruded with defecation, but was easily reduced, provided he was not constipated. He was able to extrude the prolapse at will, to a distance of 8 or 10 inches. His general health was perfect. The only other anomaly he presented was internal strabismus, and this was shown by no other member of his family. His son of 11 years, whom he brought for our inspection, had an identical prolapse. On inquiry it turned out that Joseph had made a consanguineous marriage, his wife being his second cousin, and his wife's father (his first cousin) also having the anomaly. Furthermore, both his parents (who were so far as he knew not consanguineous), and all his five brothers had had the same condition, though none of their fifteen children had shown it.

Accordingly, we made careful inquiries as to the family history, and we believe the accompanying chart to be entirely accurate. So far as we were able to ascertain, there were five consanguineous marriages. But, as all the family came from the limited Jewish community of a small Russian village, it is possible, indeed probable, that there was blood relationship also in some of the earlier marriages. In addition to the four consanguineous marriages evident in the family tree, Chaim and Itsel were cousins having the same family name, but how far removed we cannot ascertain.

The study of the family tree leads to the following deductions:

1. The condition is undoubtedly inherited, and the inheritance is not sex limited.



Heredity of complete rectal prolapse.

2. Convincing evidence of the recessiveness of the character is afforded by the nonoccurrence of prolapse among the fifteen children and three grandchildren of Joseph's five brothers, or among the five children of Selig I. In all these instances one parent showed the peculiarity, the other did not; if the character was dominant, it should show in one-half the children in those cases in which the abnormal parent had it in a hybrid condition and in all the children in those cases in which the abnormal parent had it in a pure condition. The fact that it shows in not one of these twenty-three children is therefore very strong evidence that it is not dominant but recessive.

3. In view of these cases, the occurrence of prolapse in the child Selig II is easily explained, for a recessive character can show only if inherited from both parents (though it may be shown by neither of them); and in this instance it is apparent that the inheritance is from both sides, the mother, Sadie, not showing it but transmitting it nevertheless as a recessive character from her father, who did show it.

* From the Medical Department, Mount Sinai Hospital.

The question of dominance or recessiveness in this case is one of considerable practical importance, perhaps of broad significance. A recessive character comes to expression only when inherited from both parents. Since the present anomaly is an exceedingly rare one, the likelihood of a member of an affected family marrying a member of another affected family is very small. The condition can therefore be carried unsuspected as a recessive through many generations, before, through the accident of such a marriage of two seemingly normal persons, it appears in one or more children. This is the explanation of the usual sporadic occurrence of this sort of anomaly. It was only through the accident of the marriage of two affected persons and the subsequent cousin-marriage of one of their sons that the heredity of the condition was discovered in the present instance.

CONCLUSIONS

In the family described, prolapse of the rectum is a hereditary defect and appears to be a mendelian recessive character.

The family histories of other cases of prolapse of the rectum, not due to known disease, should be searched; possibly all such cases are hereditary and the hereditary character has failed to be recognized because of recessiveness and rarity which allow the skipping of many generations.

TESTING PATENCY OF FALLOPIAN TUBES

FINDINGS IN THIRTY CASES *

ROBERT THRIFT FERGUSON, M.D.
CHARLOTTE, N. C.

I present a condensed report of thirty cases to show the results I have obtained with this instrument I have devised, and what may be expected of it for the future. There have been no untoward results in a single case of the series.

The apparatus [1] consists of a one-piece glass tube, with a right-angled arm for the attachment of a rubber tube leading to the manometer; a posterior beveled tip for the attachment of a 2 ounce rubber bulb ear syringe, and an anterior curved tip for insertion into the cervix, with a bulb blown into it about 1½ inches back of the tip, which plugs the cervix and prevents the escape of air during the test.

Determination of the patency of the fallopian tubes by means of intra-uterine inflation is a comparatively recent operation devised and reported by Rubin.[2] Before Dr. Rubin made this discovery, it was impossible to tell anything about the patency of the tubes except by direct inspection; now it is an easy matter to tell whether the tubes are patent, and which one, in case one is closed, by use of the stethoscope over the pelvis while the air is passing through the tube. There was a great deal of hesitancy in the beginning about injecting gas of any kind into the peritoneal cavity, and so oxygen was first used in the test; later carbon dioxid was used, as this was found to be more readily absorbed; and later still, ordinary air had its inning with almost as good results, the only difference being that air caused a little more pain in the abdominal cavity following the test, and was not quite so readily absorbed, though the pain from any one of the three was insignificant. Since perfecting my apparatus, I have used air only, and have been able to reduce the after-pains to a minimum; in fact, there has been no after-pain whatever in 98 per cent. of my cases. This I can attribute to several factors, chief of which is that the apparatus being under direct and immediate control of the fingers, the bulb is released as soon as one feels the pressure give under the fingers, and therefore a minimum quantity of air is introduced into the peritoneal cavity.

Findings in Thirty Cases

Average age of patients	28
Average number of years married	6
Number formerly pregnant	9
Number of miscarriages	6
Number never pregnant	21
Having normal menstrual history	10
Suffering from dysmenorrhea	20
Leukorrhea	22
Positive gonorrheal infection	3
Malposition of uterus	12
Ovarian cysts	10
Pelvic adhesions	11
Previous unsuccessful operations for sterility (one patient had five)	11
Number of patients in whom tubes were found to be closed	15
Number found patent	15
Diagnosis confirmed by operation	5

My instrument is easily handled and has no cumbersome attachments, such as a volumeter and gas tank; it is in one piece; the cost is insignificant; I get the same results with less pain; the patient can immediately resume her journey without the slightest discomfort; the danger has been reduced to a minimum by removal of the gas tank under high pressure; it has only one attachment, that to the manometer, which is made after the instrument is inserted into the cervix; and the instrument can be dropped into the sterilizer with bulb attached and made ready for use in a few minutes without extra handling.

I do not consider that any set of tubes is definitely closed until at least two tests have been made at intervals of from two to six weeks. Occasionally it will happen that gas will not pass through the tube at the first test and will at a later test. I will not attempt to account for this at present, but I have some definite ideas as to the cause, which I will bring out later. It often happens that air passes through the tube at a very much higher reading at the first time than at the second; this is probably accounted for by the fact that there may have been some kinks or fine adhesions that are stretched or broken under the strain of the first test, and when they are freed there is much less obstruction. It has also been noted in a few cases that a patient who has been sterile will conceive following the repeated use of this test. It would appear that there was a kink or minor adhesion in the tube which had been cleared up by the passage of air through the tube. This brings up the question of the danger of rupturing the tubes with this test or any other blind patency test. There has so far been reported only one case of rupture of a tube, and this was done with the patient under an anesthetic with the abdomen open and gas injected under a pressure of 250 mm. of mercury into a closed tube that had to be removed to see what amount of pressure would be necessary to cause rupture. Following this experiment, we have adopted 200 mm. of mercury as our maximum rate in every case as being an entirely safe procedure, and no accident has been reported thus far in several thousand cases.

* Read before the Seventh District Medical Society, Wadesboro, N. C., Oct. 7, 1924.

1. Described in Surgery, Gynecology and Obstetrics 39:831 (Dec.) 1924.

2. Rubin, I. C.: Nonoperative Determination of Patency of Fallopian Tubes by Means of Intra-Uterine Inflation with Oxygen, and Production of an Artificial Pneumoperitoneum, J. A. M. A. 76:661 (Sept. 4) 1920; Am. J. Roentgenol. 8:120 (March) 1921; ibid. 8:459 (Aug.) 1921.

Before making the test in any case, I go fully into the patient's past and present history with a thorough and complete physical examination of the entire body, and all this forms a part of my record. The blood count in all cases is normal unless otherwise stated.

While only three of the cases gave positive indications of gonorrheal infection, I am satisfied from their histories that several other patients were so infected, but cultures and smears were negative at this time. It is extremely difficult to find gonococci present in cases of long standing. At least two of these patients became infected following the use of stem pessaries, as there was no history of any leukorrhea until after wearing the pessaries. I merely mention the stem pessary to condemn it, as a chronic endocervicitis often follows its use. One outstanding fact in the cases that I have seen is that a large number who give no history and have no physical findings indicative of tubal trouble have nonpatent tubes.

It is very important in all cases of sterility in which the cause cannot be located in the female to examine the semen of the husband to determine whether the spermatazoa are active. Husbands will promise to bring in specimens but often fail to return; the reason is obvious. My instrument is admirably adapted for injection of the semen into the uterus in cases that are suitable for this procedure.

The advantages of the tubal patency test are numerous, but the most important one is in cases of sterility; and I am sure that in the future no surgeon would be considered justifiable in doing any operation for sterility until the patency of the tubes had been established.

Professional Building.

ACTION OF ACRIFLAVINE ON THE BLOOD AND CERTAIN TISSUES OF RABBITS

WITH PARTICULAR REFERENCE TO HEMOLYTIC STREPTOCOCCUS SEPTICEMIA *

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AND
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To combat those organisms against which serum therapy is found to be inadequate, medical men turn hopefully to any chemical agent that is reported to be of value. In recent years, Browning and his co-workers [1] have published a number of papers regarding the effects of acriflavine on various microorganisms in vitro. On the basis of finding that it was more effective in serum than in other suspending mediums, in contradistinction to most of the well known antiseptics, they advocated its use intravenously in acute infectious processes. In opposition to this suggestion, Fleming [2] brought out certain facts which seemed to prove that in antiseptic concentration it was deleterious both to the erythrocytes and to the leukocytes, and he concluded that it was therefore not safe as an intravenous medicament.

Since Fleming's report, a neutral preparation of acriflavine has been prepared, which is considered safer than the original substance for intravenous injection. Recently, this neutral acriflavine has been used intravenously rather extensively in all sorts of acute infections, both medical and surgical. Most of the reports of its use have been favorable, while a few have been unfavorable. An examination of many of these papers reveals the fact that the conclusions made by the authors regarding the beneficial or deleterious effect of the drug were not based on well controlled data. So far as we can find, there has been no report of well controlled experimental work on animals, to determine the effect of the drug either on organisms in the blood and tissues or on the blood and tissues themselves, although Fleming touched on some of these points in his experiments with the original dye. It is important to know these effects before any drug can be rationally used by the intravenous route, and such therapy in human beings without this knowledge is, to say the least, a very questionable procedure. The present widespread use of the drug demands an investigation as to its real value and safety.

The questions that appear to us to be important to decide are these: 1. What is the effect of the intravenous injection of acriflavine, (*a*) on the white cell and red cell counts; (*b*) on the fragility of the red cells; (*c*) on the coagulation time and bleeding time of the blood, and (*d*) on the viability and phagocytic power of the leukocytes? 2. Does the intravenous injection of acriflavine give to the whole blood or to the serum any bactericidal or bacterial inhibiting properties not present in normal blood? 3. What effect has acriflavine on the various tissues of the body when given intravenously? 4. Does intravenous acriflavine reach a concentration in certain tissues sufficient to have a bactericidal or bacterial inhibiting effect on organisms in those tissues? 5. What is the cause of death in those animals which die following a large dose of the drug? 6. Can the injection of nonlethal doses of the dye prevent death after the injection of a lethal dose of organisms? Experiments planned to answer these questions have been carried out in this laboratory, and the results are reported herewith.

EXPERIMENTAL

Throughout the tests we have used the New and Nonofficial Remedies drug "neutral acriflavine" for injection. It was dissolved in the concentration of 1 per cent. in hot physiologic sodium chlorid solution made from fresh double distilled water. It was then filtered and autoclaved. The dose recommended by the producers of the dye for intravenous use in the human being is 250 mg., or about 4 to 5 mg. per kilogram of body weight. It is stated on the box containing the drug that this dose may be repeated daily. Recently, larger doses have been advocated. In our experiments, we have arbitrarily taken 2.5 mg. per kilogram as the unit dose for a rabbit and have experimented with this dose and with multiples of it. The blood volume of a rabbit has been estimated to be about one twentieth of the body weight or 50 c.c. of blood per kilogram.[3] On injection, if all of the dye were held in the blood mass, the unit dose would be diluted quickly from its initial

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* Owing to lack of space, a photomicrograph and several tables that were submitted with this article have been omitted.

1. Browning, C. H.; Kenwaway, E. L.; Gulbransen, R., and Thornton, L. H. D.: Flavine and Brilliant Green, Powerful Antiseptics with Low Toxicity to the Tissues: Their Use in the Treatment of Infected Wounds, Brit. M. J. 2:72-78 (Jan. 20) 1917. Browning, C. H.; Gulbransen, R., and Thornton, L. H. D.: Antiseptic Properties of Acriflavine, Proflavine and Brilliant Green: Wound Therapy, ibid. 2:70-75 (July 21) 1917. Browning, C. H., and Cohen, J. B.: The Chemotherapy of Pyogenic Infections, with Special Reference to the Antiseptic Properties of Acridine Compounds, ibid. 2:693-699 (Oct. 29) 1921.

2. Fleming, A.: The Physiological and Antiseptic Action of Flavine, Lancet 2:341-349 (Sept. 2) 1917.

3. Howell, W. H.: Text Book of Physiology, Ed. 7, Philadelphia, W. B. Saunders Company, 1919, p. 670.

concentration of 1:100 up to 1:20,000. As a matter of fact, however, the tissues promptly remove it from the blood, and it must very quickly pass beyond that dilution. The concentration of the dye in the tissues can be estimated only comparatively. This will be discussed in more detail below.

EFFECT OF ACRIFLAVINE ON NUMBER OF WHITE CELLS AND RED CELLS IN THE BLOOD

The blood of two normal rabbits was counted at intervals of one, three, five, seven, twenty-four, forty-eight and seventy-two hours in order to determine the normal variation of white and red cells. Then counts were made at corresponding intervals following the injection of acriflavine in doses varying from 2.5 to 25 mg. per kilogram of body weight. It was found that the white cell count rose within three hours after injection corresponding in degree to the amount of dye injected. The increase following the largest dose was a little over 50 per cent. The count fell again after from three to five hours and was practically normal in twenty-four hours. The percentage of polymorphonuclears rose and fell accordingly. The leukocytosis did not persist even in the rabbit which received the largest dose and which died on the third day. The significance of the leukocytosis will be discussed below. The injection of acriflavine had no appreciable effect on the number of red cells.

EFFECT OF ACRIFLAVINE ON THE FRAGILITY OF THE RED CELLS

For testing the effect of acriflavine on the fragility of the red cells, a series of small tubes was prepared, each containing 1 c.c. of sodium chlorid solution in concentrations ranging from 0.36 to 0.66 per cent. at intervals of 0.02 per cent. Blood was taken from the rabbit by heart puncture and placed immediately in 1 per cent. sodium citrate solution in physiologic sodium chlorid solution. After centrifugation, the cellular sediment was taken up in a capillary pipet, and 1 drop of the thick suspension of cells was put into each test tube of the series. After two hours at room temperature, the result was recorded. The levels at which complete hemolysis took place and at which there was no hemolysis were noted. The test was made in each case before injection and again one hour after injection with the proper dose of acriflavine. It was found that the blood of eleven normal rabbits showed on the average complete hemolysis at a saline concentration of 0.425 per cent., and no hemolysis at 0.55 per cent. The difference between the normal blood and the blood one hour after the injection of doses of acriflavine, ranging from 2.5 to 37.5 mg. per kilogram of body weight, was hardly appreciable.

When the fragility test was carried out in vitro with known concentrations of acriflavine, the result gave us more direct information about the action of the drug. The acriflavine was prepared in a series of dilutions from 1:500 up to 1:25,000 and was used in twice the concentration desired for contact with the cells. Blood was taken from the rabbit by heart puncture and put into an equal amount of 1 per cent. sodium citrate in physiologic sodium chlorid solution. The blood was then centrifugated, washed once and suspended in physiologic sodium chlorid solution in an amount equal to the original blood volume removed. One cubic centimeter of this saline cellular suspension was then added to an equal quantity of each of the acriflavine dilutions and to a saline control. The tubes were incubated for one hour at 37.5 C., and were shaken every ten minutes during the hour to insure intimate contact and even suspension. They were then centrifugated, and the cellular sediment was taken up in a capillary pipet. One drop of the cells was then added to each tube of a saline series as in the previous test, one series of saline tubes being used for each acriflavine dilution. It was found that a concentration of 1:1,000 caused a marked increase in the fragility of the red cells, while with higher dilutions up to 1:40,000 there was only slight increase of fragility. Above 1:40,000, there was practically no effect.

EFFECT OF ACRIFLAVINE ON THE CLOTTING TIME OF THE BLOOD

For testing the effect of acriflavine on the clotting time of the blood, the blood was taken by heart puncture and 1 c.c. was put quickly into a freshly paraffinized 5 c.c. test tube. The tube was tipped slightly at one-fourth minute intervals until the clot became firm and the tube could be inverted without spilling. The time was taken from the moment it appeared in the syringe, after heart puncture, until a firm clot had been formed. The blood was tested in this manner before and again one hour after the intravenous injection of the proper dose of acriflavine. It was found that the blood from eleven normal rabbits gave an average clotting time of 5.4 minutes, varying from 1.5 to 11.75 minutes. After acriflavine in doses varying from 2.5 to 37.5 mg. per kilogram, the same rabbits averaged 6.4 minutes, ranging from 3 to 10.5 minutes. The evidence is against any marked delay in clotting time with the doses given.

The clotting time was also tested in vitro with known concentrations of acriflavine. For this test, 0.1 c.c. of a series of acriflavine dilutions from 1:100 up to 1:12,000 was placed in freshly paraffinized 5 c.c. test tubes. Blood was taken from the heart by syringe, and 0.9 c.c. was quickly added to each tube of the series. The tubes were then quickly but thoroughly shaken, and the clotting time was determined as in the previous test. The final acriflavine concentration then ranged from 1:1,000 to 1:120,000. It was found that even in the highest dilution tested there was a slight but definite delay in clotting time, with still greater effect in concentrations down to 1:5,000. With the 1:1,000 dilution there was complete inhibition of clotting.

EFFECT OF ACRIFLAVINE ON THE BLEEDING TIME

In testing the effect of acriflavine on the bleeding time, one of the large ear veins was pricked with a sharp cutting needle, and the drop of blood that flowed was blotted at intervals of fifteen seconds until no more blood appeared. Nine normal rabbits had an average bleeding time of 1.53 minutes, ranging from 0.75 to 2.5. Three rabbits receiving the unit dose of acriflavine averaged two minutes. Three, receiving five times the unit dose, averaged 2.3 minutes. Three, receiving ten times the unit dose, averaged 1.3 minutes. These figures show that the injection of large doses of acriflavine has no appreciable effect on the bleeding time.

EFFECT OF ACRIFLAVINE ON THE VIABILITY OF LEUKOCYTES

The method of Sabin [4] for staining leukocytes with a vital stain is a simple and accurate means of determining their viability. Sabin also considers this staining property to be indicative of the power of leukocytes

4. Sabin, Florence R.: Studies of Living Human Blood Cells, Bull. Johns Hopkins Hosp. 34: 277-288 (Sept.) 1923.

for phagocytosis. A film of 0.5 per cent. neutral red (Burroughs Wellcome) in absolute alcohol was spread evenly on a slide and quickly dried. A drop of blood was obtained from a rabbit's ear by puncture and placed on a cover slip. This was then inverted on the stained slide and sealed at the margins with paraffin to prevent drying. The slide was then placed on a warm stage, and the cells were examined for staining and mobility.

The concentration of our stain was greater than that recommended by Sabin. It was found that weaker solutions of the Burroughs Wellcome stain were not strong enough to stain the granules. The 0.5 per cent. stain colored the granules plainly without staining the nucleus. This is Sabin's criterion for the proper strength of the stain. The various normal white cells appeared essentially as Sabin has described them with Grübler's stain on human blood, except that the eosinophils and basophils were very rarely motile, and the polymorphonuclears never traveled across the field with as much rapidity as she describes. The polymorphonuclears showed a more or less constant streaming of the granules within the cell, and the pseudopods were active. Cells that did not stain were never found to be motile. Sabin found that in almost every specimen of human blood a small percentage of polymorphonuclears were motionless and failed to stain. These she considered to be dead or dying leukocytes. With this method, an examination of the rabbit's blood was made before injection with acriflavine and at intervals of one-half hour, one hour and two hours after injection. The unit dose as well as five times and ten times this dose were used. The test was made a number of times with each dose. Following the two larger doses there was a slight temporary diminution of the percentage of motile and stainable polymorphonuclear leukocytes, but in one hour there was a complete restoration to normal.

The test was then repeated with known concentrations of acriflavine. For this experiment, a series of tubes was prepared, each containing 0.1 c.c. of a series of dilutions of acriflavine in physiologic sodium chlorid solution from 1:1,000 to 1:1,000,000 and used in concentrations ten times that which was desired for the final concentration. Blood was then taken by heart puncture, and 0.9 c.c. of blood was added to each test tube. The blood and the dye were quickly but thoroughly mixed and a drop from each tube was placed on a cover slip, which was then inverted on a neutral red stained slide and sealed as in the previous test. The slides were kept at incubation temperature and examined on a warm stage. It was found that in a dilution of 1:1,000 the cells were motionless and were stained yellow. In the 1:10,000 dilution, motility and staining were definitely inhibited. In the 1:100,000 dilution there was no inhibition.

BACTERICIDAL OR BACTERIAL INHIBITING ACTION OF ACRIFLAVINE-CONTAINING BLOOD

For testing the bactericidal or bacterial inhibiting action of acriflavine-containing blood, a virulent strain of hemolytic streptococcus was used. This strain, S. VIII-13, had been passed through thirteen rabbits, and 0.001 c.c. of a standard suspension killed in from seven to ten days when injected intravenously. Our standard suspension has been estimated by the method of Gates[5] to contain a billion organisms per cubic centimeter. Cultures of the organisms were made as follows: One-tenth cubic centimeter of the stock blood broth culture was incubated for eight hours in 25 c.c. of 1 per cent. dextrose broth. One cubic centimeter of this culture was then transplanted into each of three other tubes containing the dextrose medium, and incubated for four hours. This short incubation time was used because we have found that in the dextrose broth medium streptococci begin to die off in a relatively short time. The standard suspension was then made in a solution containing Locke's solution with 0.1 per cent. gelatin. In this solution it has been found that they will remain viable for a long time.[6] This suspension was then carried down through six dilutions, each one containing one tenth of the number of organisms in the previous dilution. The sixth dilution, therefore, contained approximately 1,000 organisms per cubic centimeter. Then a series of four small test tubes was set up containing, respectively, 0.1 c.c. of the third, fourth, fifth and sixth dilutions. Blood was then taken from a rabbit by heart puncture and shaken up immediately with one ninth of its volume of 1 per cent. gelatin and 4 per cent. sodium citrate in physiologic sodium chlorid solution. Then 0.5 c.c. of this citrated blood was added to each tube containing the bacterial dilutions. The tubes were sealed with paraffined corks, and placed on Robertson and Sia's[7] rotating machine in the incubator. This machine insures a constant mixing of the tube contents, simulating conditions in the blood stream. After the first heart puncture and the withdrawal of normal blood from the rabbit, acriflavine in the proper amount was injected intravenously. At intervals of one-half hour, one hour and two hours after acriflavine injection, blood was again withdrawn from the rabbit and prepared and distributed as described above in another similar series of bacterial dilutions. These tubes in their turn were put on the rotating machine. With each set of tubes, controls containing plain broth and 0.4 per cent. sodium citrate broth were inoculated with 0.1 c.c. of the fifth and sixth dilutions. After twenty-four hours' incubation, an examination was made of the cultures to determine the presence or absence of growth. It was found that in no case did the blood show any inhibition of bacterial growth even in the highest dilution of the organisms.

Tests were carried out to determine the effect of the gelatin and the sodium citrate on the bactericidal action of acriflavine and on the motility of the leukocytes and their staining capacity for neutral red. It was found that these substances had no effect when used in the concentration employed in the previous test.

BACTERICIDAL OR BACTERIAL INHIBITING ACTION OF ACRIFLAVINE-CONTAINING SERUM

Cultures of the organisms were made, suspended and diluted as in the preceding experiment. Serum was obtained from a normal rabbit. Three other rabbits were injected intravenously with the unit dose, five times and ten times the unit dose of acriflavine, respectively. At intervals of one-half hour, one hour and two hours, blood was taken from the three acriflavine rabbits and the serum was obtained. Then, at each period, 0.5 c.c. of each of the four different serums

5. Gates, F. L.: A Method of Standardizing Bacterial Suspensions, J. Exper. Med. 31:105-114 (Jan.) 1920.

6. Meleney, F. L., and Zau, Z. D.: The Viability of Hemolytic Streptococcus in Certain Solutions Containing Gelatin, J. Exper. Med. 39: 811-825 (June) 1924.

7. Robertson, O. H., and Sia, R. H. P.: Studies on Pneumococcus Growth Inhibition, II, A Method for Demonstrating Growth Inhibitory and Bactericidal Action of Normal Serum Leucocyte Mixture, J. Exper. Med. 39: 219-244 (Feb.) 1924

was added to four different series of small test tubes containing, respectively, 0.1 c.c. of the third, fourth, fifth and sixth dilutions of the bacterial suspension. Controls containing plain broth with the fifth and sixth dilutions of the organisms were included at each period. The tubes were then sealed with paraffined corks, and placed in Robertson and Sia's rotating machine in the incubator. After rotating at 37.5 C. for twenty-four hours, they were examined for growth inhibition. It was repeatedly found that there was no inhibition in the normal serum or in the serum of the rabbits receiving the unit dose or five times the unit dose. With the serum of the rabbits receiving ten times the unit dose, there was an irregularity of results. With two rabbits, there was complete inhibition at all three periods. With two other rabbits, there was no inhibition. With one, there was partial inhibition.

When acriflavine in known concentration was added to normal serum, it was found that there was definite inhibition with dilutions as high as 1:250,000, when 0.1 c.c. of the third dilution of the standard suspension of S. VIII-13 was added to 0.5 c.c. of the serum-acriflavine mixture.

IMMEDIATE EFFECT OF INJECTION, AND LOCALIZATION OF ACRIFLAVINE IN THE TISSUES OF THE RABBIT

When the unit dose of 2.5 mg. per kilogram of body weight was injected intravenously, there was no appreciable systemic effect on the rabbits. The skin of the ears and the conjunctivae were definitely but faintly stained yellow. When five and ten times the unit dose were injected, there was either a slight or a profound disturbance, according to the rapidity of injection. If injected slowly, there was a general relaxation of all the muscles, and for from thirty to sixty seconds after injection the rabbits remained perfectly still. After that they hopped around and appeared to be normal. When the dye was injected more rapidly, cyanosis developed and relaxation was extreme. Some animals became dyspneic or stopped breathing. In one case, after ten times the unit dose, the animal stopped breathing and could not be resuscitated. In three other cases, the rabbits responded only after artificial respiration had been instituted. The ears, the conjunctivae, the retinas and the skin became bright yellow. Rabbits receiving ten times the unit dose invariably succumbed within six days after injection. The average length of life was four days. Before death they became greatly prostrated or paralyzed, and some of them terminally developed convulsions. The convulsions were of the clonic type and often lasted for half an hour. The animals appeared to be unconscious. Respiration gradually became very slow and then ceased altogether. About half of the rabbits that were given five times the unit dose died in from four days to two weeks. Those which survived were more or less sick during the first week. Approximately 20 per cent. of the rabbits that were given twice the unit dose succumbed in from six to twelve days. This was almost equivalent to the dose recommended for human therapy. Those receiving the unit dose all survived the injection, although a number died two or three weeks afterward of intercurrent diseases. When the animals were killed shortly after injection, certain of the tissues were found to be very brightly stained, others faintly and still others not at all. There seemed to be a very definite affinity between certain tissues and the dye. Those tissues which were brightly stained were the skin, muscle, conjunctiva, retina, lacrimal gland, kidney, liver, lungs, stomach, small intestine and pituitary body. Those tissues which were faintly stained were the heart, spleen, pancreas, fat, large intestine, bladder and uterus. The spinal cord, brain and meninges remained unstained with the single exception of the pituitary body, which appeared bright yellow in contrast. The fluids of the eye and the lens were not stained, and the amniotic fluid and the fetuses of pregnant rabbits remained unchanged. The tissues remained stained for three or four days in the rabbits receiving five times the unit dose, and until death in those receiving ten times the unit dose. Apparently a considerable amount of the dye was held by certain tissues for a long time. Some of the dye that was carried to the kidney was excreted and some held by the tissue. This point will be considered further in the paragraph on the pathologic changes in the tissues.

BACTERICIDAL OR BACTERIAL INHIBITING ACTION OF CERTAIN TISSUES STAINED WITH ACRIFLAVINE

The staining of the tissues suggested that the dye might reach a concentration in certain tissues sufficient to have a local antiseptic action on organisms that might be present there. Four of the tissues that stained brilliantly were chosen for this test. Portions of the kidney, liver, lung and muscle were removed aseptically from a normal rabbit and from other rabbits one hour after the intravenous injection of the proper dose of acriflavine. With great care, in a dust-proof room and under cover of a Petri dish, these tissues were cut up into small pieces and about 0.5 gm. of each tissue was placed in a series of four small test tubes containing 0.9 c.c. of Locke's solution with 0.1 per cent. gelatin. Cultures of hemolytic streptococcus VIII-13 were made, suspended and diluted as in the previous experiments. Then 0.1 c.c. of the third, fourth, fifth and sixth dilutions were added, respectively, to the series of tubes containing each tissue, and the tubes were sealed with paraffined corks. These were then placed in the rotating machine in the incubator. They were rotated over night and examined after twenty-four hours to determine growth or inhibition of the organisms. It was found that one hour after the injection of ten times the unit dose, the kidney and liver tissues inhibited the growth of organisms in all dilutions, while they grew luxuriantly in the lung and muscle. After five times the unit dose, the kidney tissue inhibited but the liver did not. After two times the unit dose and after the unit dose, there was no inhibition in any of the tissues. In the normal tissues and in broth controls, all dilutions grew out.

PATHOLOGIC CHANGES IN CERTAIN TISSUES AFTER FATAL DOSES OF ACRIFLAVINE

It has been stated that all the rabbits which received ten times the unit dose died within the first six days, and that half of this dose was fatal in about half of the cases in a somewhat longer time. It was thought that an early death might take place without any definite pathologic findings, as the result of a profound functional disturbance. On the other hand, the most marked pathologic changes would be expected in those rabbits which survived longest but which finally succumbed. When the tissues were examined, this was found to be the case. The most striking lesions were found in those rabbits which died on the fourth, fifth and sixth days following the injection of ten times the unit dose. Grossly, certain tissues were stained yellow, as has been stated in a previous paragraph. It was found also that the liver, in every fatal case, showed a

fine yellow and brown surface mottling. When a thin section of kidney was cut and mounted on a slide unstained, the cortex was seen to be bright yellow, while the pyramids were relatively normal.

The following tissues were examined microscopically: the heart, lungs, liver, kidney, spleen, pancreas, stomach, small intestine, large intestine, uterus, bladder, skin, muscle, lacrimal gland, retina, cerebrum and hypophysis. Definite and striking pathologic changes were found in the kidney, liver and lacrimal gland. The other tissues were relatively normal. The kidneys showed a complete degeneration of from one half to three quarters of the convoluted tubules. The nuclei did not stain, and the cytoplasm was finely granular and swollen. The swollen cells completely filled up the lumina of the tubules. The glomeruli appeared to be relatively normal. The conducting tubules were frequently found to contain casts, but the cells were normal. The kidney lesions are shown in the accompanying illustration. The liver showed a diffuse degeneration of moderate or severe grade. The cells were shrunken and at the same time contained large quantities of fat. The degeneration was found chiefly around the central veins, but frequently extended outward almost to the portal areas. The lacrimal gland showed an extensive desquamation of the epithelium, the acini being filled with dead or injured cells. When the rabbits that received ten times the unit dose died within the first twenty-four hours, the kidney showed a marked swelling of the cells of the convoluted tubules. Similar but regularly less severe changes were found in those rabbits which died following five times and two times the unit dose.

ESTIMATIONS OF BLOOD UREA FOLLOWING THE INJECTION OF ACRIFLAVINE

In order to confirm the pathologic findings in the kidneys by a functional test, the urea nitrogen of the blood was tested repeatedly at certain intervals following the injection of the dye. It was found that in fatal cases the blood urea nitrogen steadily rose from a normal figure of 30 mg. in 100 c.c. of blood to 100 mg. or over just before death. In the nonfatal cases with the larger dose, it rose as high as 70 mg. and fell again. Even with the unit dose there was always a slight rise in the first few days. An examination of urine of animals receiving five and ten times the unit dose revealed a heavy albumin content and great numbers of casts, most of which were granular. Sometimes there was a complete suppression of urine for several hours after the acriflavine injection. Albumin and casts were also repeatedly found, following the unit dose or twice the unit dose either given once or repeated.

EFFECT OF ACRIFLAVINE WHEN GIVEN INTRAVENOUSLY FOLLOWING THE ADMINISTRATION OF A LETHAL DOSE OF HEMOLYTIC STREPTOCOCCI

The hemolytic streptococcus strain S. VIII-13, which had lost a little of its lethal power, was passed through three more rabbits and the virulence restored so that 0.001 c.c. of the standard suspension killed as before in from seven to ten days. The organisms were then injected into one series of three rabbits in the minimal lethal dose and into three others in ten times this amount. After twenty-four hours, one rabbit from each series was given 4 mg. of acriflavine per kilogram of body weight intravenously. This is the dose advocated for human therapy. Forty-eight hours following the injection of the organisms one more from each series received the same dose of acriflavine. The other two rabbits were kept as controls. The results of this test are shown in the upper half of the accompanying table. It is seen that those rabbits which received acriflavine not only were not protected but actually succumbed before the controls did. One very large control rabbit which received what was considered to be the minimal lethal dose survived, although he was quite sick for ten days.

The second series of rabbits were inoculated as follows: Three rabbits were given the minimal lethal dose, three others ten times and three others 100 times this dose. One of each group was kept as a control. Another received 4 mg. of acriflavine per kilogram daily after the first twenty-four hours, and the third received the same dose daily after the first forty-eight hours.

*Effect of Acriflavine Administered After the Inoculation of Hemolytic Streptococcus Intravenously**

No. of Rabbit	Weight of Rabbit, Gm.	Dose of Organisms per Kilogram (Approximate) Million	Dose of Acriflavine per Kilogram, Mg.	Time of First Injection of Acriflavine	No. of Doses of Acriflavine	Day of Death of Rabbit	Hemolytic Streptococcus Recovered
1	1,735	1	4	24 hours	1	1	+
2	1,320	10	4	24 hours	1	4	+
3	1,570	1	4	48 hours	1	4	+
4	1,320	10	4	48 hours	1	8	+
5	1,670	1	None	Control	0	Survived	0
6	1,480	10	None	Control	0	5	+
7	1,130	1	4	24 hours	3	6	+
8	1,380	10	4	24 hours	3	6	+
9	1,620	100	4	24 hours	3	5	+
10	1,580	1	4	48 hours	7	8	+
11	1,170	10	4	48 hours	4	6	+
12	1,092	100	4	48 hours	6	7	+
13	1,555	1	None	Control	0	7	+
14	1,495	10	None	Control	0	7	+
15	1,051	100	None	Control	0	7	+

* This table gives the results in two experiments. In the first test, six rabbits were used and a single dose of acriflavine was given. In the second test, nine rabbits were used and acriflavine was given daily until death. The organism was recovered from all except one large control rabbit. The second survived the minimal lethal dose.

The results appear in the lower half of the table. It is seen that in this series also, except in one instance, those rabbits which were given acriflavine died before the controls.

COMMENT

Leukocytosis is generally considered to be a reaction to injury, and the degree of reaction is supposed to depend on two factors: the severity of the injury and the resistance of the individual. In this series of rabbits, the rise is proportional to the dose of acriflavine. It is probable that a leukocytosis is of benefit to the body only in combating the invading force or in resisting the injury. It is possible that an overproduction of leukocytes might be able to resist not only the injury due to the dye but also another concomitant injury, such as an infection. Thus, in the end more good than harm might be done. On the other hand, in most infections a leukocytosis is already present. It is questionable whether the further action of acriflavine would be helpful or harmful. It is unlikely that acriflavine could cause a leukocytosis in those prostrated cases which cannot of themselves produce a leukocytosis in response to the infection. The fact that with the lethal dose of acriflavine the blood count fell to normal in twenty-four hours, while death occurred in three days, indicates that death was due to a secondary effect of the dye, quite independent of the injury manifested by the leukocytosis.

The effect of acriflavine on the red cells is apparently of small importance. An increased fragility of the red cells might result in a delayed fall in red cell count,

but an increased fragility evidently does not occur. The figures obtained in the test in vitro with known concentrations of acriflavine indicate that even with the largest intravenous dose, the acriflavine is quickly diluted beyond 1:40,000. It will be pointed out below that the dilution is really carried far beyond this figure.

Coagulation time is important from the point of view of hemorrhage on the one hand (particularly secondary hemorrhage), and thrombosis of the blood vessels on the other. That there is a slight increase of coagulation time in dilutions as high as 1:120,000 suggests that at the end of an hour the acriflavine has reached or gone beyond that point even with the larger doses. The nature of the inhibition in the 1:1,000 dilution of acriflavine was not determined, but it was evident that it was not a fixation of calcium; for, when an excess of calcium chlorid was added, no coagulation occurred even after twenty-four hours at room temperature. The fact that there was no delay in bleeding time furnishes presumptive evidence that the platelets were not injured.[8]

The test for the viability of the leukocytes indicates that with the larger doses there is a temporary inhibition of their function of taking the vital stain and of their power of phagocytosis. It is possible that this function might be severely disturbed if the acriflavine remained for a long time in the blood. As it is, there is no permanent effect. The cells that are called forth in the leukocytosis are probably fully functioning at the end of the first hour. It must be true, however, that, at the time the acriflavine is at its highest concentration and therefore has its highest antiseptic value, the leukocytes are hindered somewhat in their function of phagocytosis.

The test for the inhibiting action of citrated blood gives us, as accurately as it is possible to simulate in a test tube experiment, the conditions present within the blood stream at the time the blood is withdrawn. Presumably all the blood elements that might play a part in the inhibition of bacterial growth are present as in whole blood. In this concentration, the citrate does not interfere with the bactericidal action of acriflavine or with the leukocytes. However, the bacteria, even in the highest dilution containing approximately 100 organisms, can grow in this blood one-half hour after the lethal dose of acriflavine has been administered. The small amount of calcium in the gelatin Locke's solution, used for suspending the organisms, did not interfere with the citrate anticoagulant action. The result was the same when the organisms were suspended in gelatin citrate solution.[8]

The serum test brought out a number of interesting points: With ten times the unit dose there was at times no inhibition, and at other times complete inhibition for two hours. In no instance was there inhibition in the citrated blood with this dose. This may be explained by the fact that the serum has almost twice as much acriflavine, volume for volume, as whole blood, because what is not held by the leukocytes is in solution in the plasma. The red cells apparently do not hold the dye to any extent. The irregularity of results in the tests with the serum obtained from rabbits receiving the largest dose probably indicates a variation in the different rabbits' ability to excrete the dye. One rabbit which showed this inhibition was catheterized during the test, and it was found that there was a complete suppression of urine for at least four hours after the injection, and the rabbit died in twenty-four hours. Other rabbits began to excrete the dye very much more quickly. This suppression may account for the maintenance of sufficient concentration in the serum to inhibit for two hours. During this time the tissues may be saturated. Certainly this method of maintaining the acriflavine in the blood could in no sense be considered beneficial. This naturally brings up the question of the possibility of introducing the dye in some medium, such as acacia, which might delay its absorption by the tissue cells and its excretion by the kidneys, thus maintaining it in high concentration for a long time in the blood.

The selective action of certain tissues for the dye is most striking. It suggests some chemical reaction between the dye and certain kinds of protoplasm. If such a combination takes place, the dye may be held for an indefinite time by the cell, even though it may disappear from the blood. Thus, the function of the cell may be profoundly disturbed and eventually degenerative changes may take place. The absence of stain in the brain and cord suggests that there is no damage done to nervous tissue. The respiration phenomenon at the time of rapid administration may be a circulatory effect. The dense staining of certain tissues, on the other hand, suggest damage to those tissues. This may be temporary and merely functional, or permanent and organic. It would require many elaborate functional tests to determine the effect on all the tissues that take the stain. The organic lesions in the kidney and liver are most striking. It is highly probable that the smaller doses of the dye injure the cells in proportion to their concentration. Bohland[9] observed a case of acute nephritis with hematuria following the injection of acriflavine, and came to the conclusion that kidney disease was a contraindication for the intravenous use of the dye.

Even though tissues stain deeply, the acriflavine reaches a concentration sufficient to inhibit the growth of streptococci in certain of these tissues only when given in lethal doses. It is quite probable that the tissues bind some of the acriflavine and make it unavailable as a bactericidal agent. It is difficult to tell whether these tissues within the living body would of themselves inhibit the growth of organisms, but it is probable that the injury to the cells by the acriflavine would interfere with their power to kill bacteria. The only bacterial inhibiting factor would then be the amount of available acriflavine in these tissues. Mueller[10] has shown, in certain tissue culture experiments, that the flavine dyes inhibit the growth of tissue in the same concentration that they inhibit the growth of streptococci.

Death seems to be due primarily to the injury to the cells of the convoluted tubules of the kidneys and to the cells of the liver. Then follow all the complex body disturbances that are inevitable with the chief excretory and assimilatory organs out of commission. There may be other profound effects on the glands of internal secretion, as represented by the hypothesis, and on other tissues whose function may be more or less important, as represented by the lacrimal gland.

But, entirely aside from the particular demonstrable effects of acriflavine on the blood and tissues, it is quite obvious that, as far as the hemolytic streptococcus is concerned, acriflavine in the dose advocated for

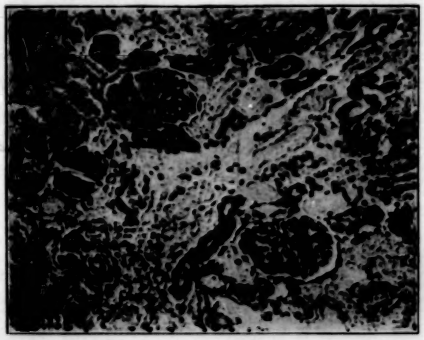
8. Duke, W. W.: The Behavior of the Blood Platelets in Toxemias and Hemorrhagic Disease: A Preliminary Report, Bull. Johns Hopkins Hosp. 23:144-146 (May) 1912.

9. Bohland, K.: Intravenous Employment of Trypaflavine in Infectious Diseases, Deutsch. med. Wchnschr. 43:797-801 (July 17) 1917.

10. Mueller, J. H.: Comparative Toxicity of Triphenyl Methane and Flavine Dyes for Tissue and Bacteria, J. Path. & Bacteriol. 23:305-318 (May) 1919.

human treatment not only does not prevent death but actually hastens death in the rabbit. It may be said to handicap this animal in its fight against the infection. This is true whether given in one dose or in several doses. It is quite likely that a larger dose would be still more detrimental than the doses used. Some investigators have tested the action of the dye when given before or with a lethal dose of certain organisms. Such tests are of only academic interest. It would be only in rare instances that acriflavine would be given therapeutically within twenty-four hours of the onset of an infection. The doses of organisms used in these tests were of themselves not overwhelming; the acriflavine had plenty of time to act before death. The survival of one control rabbit is proof of the minuteness of the smallest dose.

It is interesting to note that in the last test the three control rabbits all died on the same day in spite of the fact that the doses varied considerably. The explanation of this seems to be revealed by the experiments of Hopkins and Parker,[11] who found that when streptococci were given to rabbits intravenously in lethal doses they rapidly disappeared from the blood, but appeared again in increasing numbers on subsequent days. They believed that the organisms lodged in some favorable place, multiplied there, and from this new focus poured out a constant stream, which gradually overwhelmed the body. This would be particularly true of the smaller lethal doses of washed organisms. The injection of small quantities of washed organisms is much more like the normal entrance of organisms into the body than the injection of cultures of organisms in mediums.



Kidney of a rabbit that died on the fifth day after ten times the unit dose of acriflavine. The blood urea nitrogen just before death was 120 mg. per hundred cubic centimeters of blood. The glomeruli were relatively normal. Most of the convoluted tubules showed complete degeneration; a few were partly destroyed, while only one or two were relatively normal. Slightly reduced from a photomicrograph with a magnification of 150 diameters.

SUMMARY

1. Neutral acriflavine, when given intravenously to rabbits:

(*a*) Causes a leukocytosis in direct proportion to the amount of the dye injected.

(*b*) Has little or no effect on the number or the fragility of red cells.

(*c*) Has little or no effect on the clotting time or bleeding time.

(*d*) Has a temporary deleterious effect on the functional activity of the polymorphonuclear leukocytes.

2. Neutral acriflavine, when given intravenously to rabbits, even in lethal doses, gives to the blood no bactericidal or bacterial inhibiting properties for hemolytic streptococci; but, in certain cases, the serum will inhibit the growth of hemolytic streptococci. Nonlethal doses have no effect.

3. Neutral acriflavine, when given intravenously to rabbits, has a selective staining action on certain tissues of the body. With the lethal dose of the dye, it reaches a concentration in kidney and liver which will inhibit the growth of hemolytic streptococci planted in test tubes containing those tissues. With half this dose, which is frequently fatal, the kidney tissue inhibits but the liver does not. With nonlethal doses, there is no inhibition. There is no inhibition in lung and muscle tissue following a lethal dose of the dye.

4. With lethal doses, death is due to profound degenerative changes in the convoluted tubules of the kidney and to central degeneration in the liver. The blood urea reaches a very high level before death. In nonlethal doses, a rise in blood urea takes place during the first few days. This may indicate kidney damage. Albumin and granular casts are regularly present following even a single unit dose of 2.5 mg. per kilogram of body weight. Suppression of urine frequently takes place following the larger doses.

5. When a minimal lethal dose of washed hemolytic streptococci (which will kill in from seven to ten days) is injected intravenously and treatment is instituted with acriflavine from twenty-four to forty-eight hours afterward, in the dose corresponding to that which is advocated for human therapy, whether given once or repeated daily, the dye not only does not prevent death but actually hastens it. There is evidently no sterilizing action within the body, and the injury which the dye produces in the liver and kidneys must handicap the animal in its fight against the infection.

CONCLUSIONS

1. The bacterial inhibiting action of neutral acriflavine within the body is so slight against the hemolytic streptococcus, even in lethal doses of the dye, that it is not a legitimate intravenous medicament in hemolytic streptococcus infections.

2. Acriflavine has a selective action on certain body tissues in the rabbit which causes it to be taken up by some of those tissues in such concentration as to injure or destroy them. The kidney and the liver are particularly affected.

3. Chemical substances that are intended for intravenous use in the treatment of disease should be subjected to the most rigid tests on animals to determine their safety as well as their efficiency. The outlines of certain experiments here presented may be used for other chemical substances in connection with hemolytic streptococci or other organisms.

11. Hopkins, J. G., and Parker, J. T.: The Effect of Injections of Hemolytic Streptococci on Susceptible and Insusceptible Animals, J. Exper. Med. **27**: 1-26 (Jan.) 1918.

Reward of Public Health Work.—The development of a sound policy by the state in public health matters does not represent the enactment of a particular piece of health legislation at any given session of the legislature. It is rather a matter of slow growth and is the register of the success of the educational processes which have been employed by the public health worker in leading the public, the legislature and the governor to an acceptance that public health work pays, in terms of human lives and happiness.—R. G. Paterson: *Hosp. Soc. Serv.* **9**:21 (Jan.) 1924.

THE QUESTION OF THE EXISTENCE OF AMYLOID CASTS*

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While many textbooks on medicine and clinical pathology contain the statement that "amyloid" or "waxy" casts are commonly found in the urine of patients with or without amyloid disease of the kidneys, the existence of such casts has been questioned. It is true that casts of a peculiar "waxy" appearance are sometimes encountered in microscopic urinalysis, and it is likewise true that the diagnosis of amyloid infiltration of the kidneys has later been confirmed by postmortem examinations. Since it is difficult for any one observer

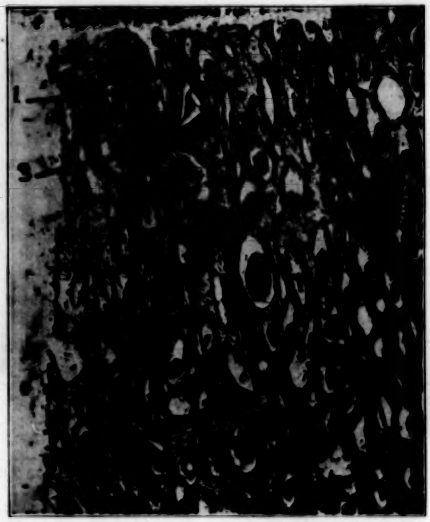

Fig. 1.—Section of kidney showing doubtful amyloid cast (slightly reduced from a photomicrograph with a magnification of 89 diameters): 1, doubtful amyloid cast; 2, nonamyloid casts; 3, amyloid degeneration of wall.

to collect a series of such data, it seemed a matter of some practical interest to study this problem by means of histologic sections of amyloid kidneys.

It may be recalled that, in the kidney, amyloid is usually present around the coats of the glomeruli, in the walls of the vessels in general, and in the lining of the basement membrane of some parts of the tubular system. While it never occurs within the renal epithelium, there are usually present various degenerative cell changes (fatty, vacuolar, parenchymatous degeneration). The question is therefore whether urinary casts in such kidneys are composed of débris from such degenerated cells, or whether they consist of amyloid material. Since the latter is insoluble in water and probably formed in situ, it seems unlikely that amyloid casts can really occur from amyloid already deposited elsewhere; but the possibility must be considered of a soluble modification or precursor being introduced into the tubules, and there changed into an insoluble amyloid cast.

* From the laboratory of histopathology of the Philadelphia General Hospital.

METHOD AND RESULTS

In 3,047 necropsies performed at the Philadelphia General Hospital within the last three and a half years, fifty cases of amyloid infiltration of the kidneys were present; this gives an incidence of 1.7 per cent. Paraffin sections of formaldehyd fixed material were stained with methyl violet, and studied immediately after preparation. The relative distribution of the specifically stained amyloid matter was recorded, and particular attention was paid to the staining reaction of casts within the lumina of the tubules. The results are given in Table 1.

TABLE 1.—*Relative Distribution of Amyloid in Kidney Sections*

	No. of Cases	Per Cent.
Casts giving amyloid reaction	1?	..
Casts not giving amyloid reaction	45	90
Amyloid in glomeruli	50	100
Amyloid in vessels	49	98
Amyloid around basement membrane of tubules	14	28

This table shows that in one instance only one cast gave a staining reaction which might be interpreted as characteristic of amyloid. This cast consisted of pinkish homogeneous material and was not definitely outlined like the other casts, though very suggestive. In the hematoxylin and eosin stained sections, this pinkish substance appeared as ill formed hyaline material. The sections were from a case of renal hypernephroma, with marked amyloid degeneration in the kidneys and suprarenals. There were numerous homogeneous casts in the tubules, and at least two of these gave a somewhat suggestive staining reaction, but were even more doubtfully classed as amyloid casts; the other casts in this section did not react to methyl violet.

In forty-five cases, the sections contained casts, most of which stained deeply blue (with methyl violet); and, while some had pinkish hues, in none a color similar to that of the amyloid of the vascular and the connective tissue in other parts of the section was seen. These casts were therefore regarded as free from amyloid substance.

TABLE 2.—*Urinalysis in Fifty Cases of Amyloid Disease of the Kidneys*

Condition of Urine	No. of Cases
Normal	11
Albumin present	15
Casts and albumin present	14
No record	10

The relative distribution of the amyloid deposits in the sections is of some interest. As shown in Table 1, amyloid was found in some of the glomeruli of all cases, and in all but one case, some of the intertubular capillaries, and vessels in general, contained this substance. The basement membranes were involved in only fourteen cases; two of these showed the deposition chiefly in the membranes of the convoluted tubules, the other twelve in the collecting tubules.

While it is well known that the microchemical reaction of methyl violet to amyloid is sometimes negative, it seems permissible to use the data obtained, since in all

the sections a "specific" staining was found in some portion of the section.

As a matter of interest, the results of the urinary examinations were analyzed (Table 2). As noted in this table, in eleven cases the urine was normal, and in

Fig. 2.—High power view of the same section (slightly reduced from a photomicrograph with a magnification of 368 diameters) showing: 1, doubtful amyloid cast; 2, amyloid degeneration of wall.

only fourteen cases were casts of some sort seen. There is no record that amyloid stain had been applied to the urinary casts, and no specific mention in any of the fourteen cases that amyloid or waxy casts had been encountered.

The specific gravity of nineteen cases reported on in the necropsy protocols was over 1.020 in twelve cases, and over 1.010 in the other seven. In one case, it varied between 1.004 and 1.028. In the case in which a suggestive amyloid cast was present, the specific gravity was 1.020. The specific gravity findings seem to be of special interest, as contrasting markedly with the findings in amyloidosis of kidneys given in various texts, though the number is too small to form a basis for drawing any conclusion.

TABLE 3.—*Etiology of Fifty Cases of Amyloid Disease of the Kidney*

Diagnosis	No. of Cases	Per Cent.
Tuberculosis	41	82
Neoplasm	6	12
Chronic nephritis	3	6

The etiology of these cases was analyzed as a matter of added interest (Table 3). In this table, it is noted that tuberculosis was the etiologic factor in 82 per cent. of this series of cases, neoplasms in 12, and chronic nephritis in 6 per cent. These cases of nephritis were not associated with any chronic suppurative lesions.

SUMMARY AND CONCLUSION

Histologic sections of fifty amyloid kidneys were stained with methyl violet, and the relative distribution of the amyloid degeneration studied. Casts of various forms were found in forty-five cases; and only one of these, though doubtful whether it was a cast, gave a definite microchemical reaction for amyloid. This would throw doubt on the occurrence of amyloid casts in the urine of patients suffering with amyloid kidney and may show that the specifically staining amyloid plays no part in forming any of the casts.

MYXEDEMA HEART *

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The cardiac features of hyperthyroidism are well known and are given due consideration in most works on heart disease. On the other hand, the myocardial weakness and heart failure nearly always found associated with hypothyroidism and myxedema are apparently little appreciated by the profession and are given scant consideration in works on heart disease. My first presentation of a typical case of myxedema heart at staff rounds at the Minneapolis General Hospital was received with great skepticism. Osler,[1] in the chapter on myxedema, says, "The functions of the heart are normal." Hirschfelder [2] says: "In myxedema there are symptoms of cardiac weakness. The patients get out of breath on very slight exertion. The pulse is small and weak. . . . However, as Kraus points out, the cardiac features in cachexia thyreopriva are not prominent features of the disease and hence are of little importance in connection with diseases of the heart." Mackenzie [3] makes no mention of the heart failure of myxedema. Romberg [4] devotes one paragraph to the description of

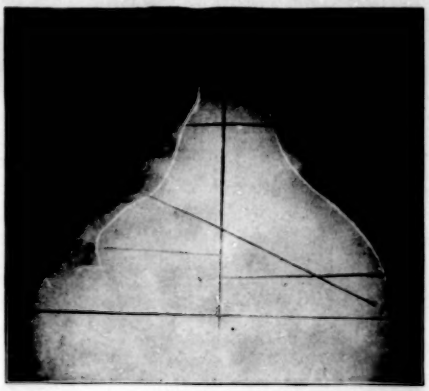

Fig. 1.—Teleroentgenogram of heart, of first patient, Oct. 8, 1923: basal metabolism, —25; MI, 11; Mr, 8; L, 17. The outline of the heart has been retouched to make it distinct in the reproduction.

* From the Department of Medicine, University of Minnesota Medical School.

1. Osler: Principles and Practice of Medicine, Ed. 9, p. 867.
2. Hirschfelder: Diseases of the Heart and Aorta, Ed. 3, p. 675.
3. Mackenzie: Diseases of the Heart, Ed. 2.
4. Romberg: Lehrbuch der Krankheiten des Herzens, Ed. 3.

myxedema heart as described by Zondek.[5] Wilson[6] states that "myxedema and hypothyroidism are very frequently associated with hypertension, nephritis or arteriosclerosis or with a combination of these, and consequently with the type of cardiac disturbance to which

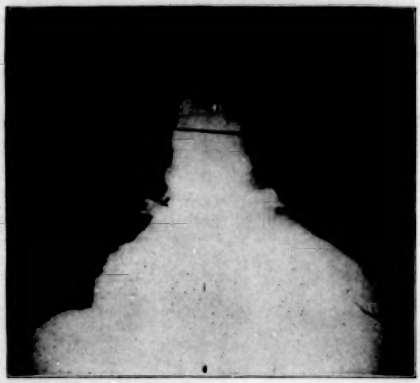

Fig. 2.—Appearance of heart, October 24, twelve days after the beginning of thyroid medication: basal rate —10; Ml, 10.6; Mr, 6.8; L, 13.7.

they give rise." He fails to mention true myxedema heart altogether.

Despite this neglect of the heart failure of myxedema and hypothyroidism in works on both myxedema and heart disease, I believe not only that it is a promi-

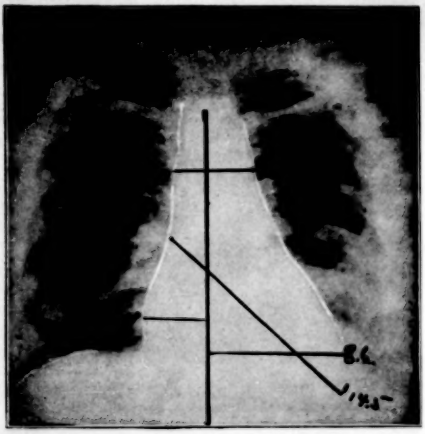

Fig. 3.—Appearance of heart, December 19: basal rate, + 3; Ml, 8.6; Mr, 4.1; L, 14.5. The heart outline has been retouched in order to bring it out more clearly in reproduction.

nent feature of all outspoken cases of myxedema, but also that a mild degree of heart failure, with very slight dilatation of the heart as determined by teleroentgenography, is not at all infrequent in women patients past the age of 45, exhibiting slight but definite evidence of hypothyroidism.

I wish to point out the cardinal symptoms and signs of outspoken myxedema heart as exhibited by the most carefully studied case in my series. I have found only eight cases described in the literature with roentgen-ray and electrocardiographic studies.[7] I have seen three cases of outspoken myxedema heart during the past academic year at the Minneapolis General Hospital. In addition, I have seen one case of what I believe to be very mild myxedema with mild cardiac symptoms including slight dilatation of the heart as determined by teleroentgenography with a basal metabolism rate of —12, in which the cardiac symptoms apparently responded to thyroid medication after digitalis had failed to make any impression on the symptoms of myocardial insufficiency:

A woman, aged 46, entered the Minneapolis General Hospital complaining of shortness of breath, swelling of the ankles, legs, and abdomen, palpitation of the heart, and great

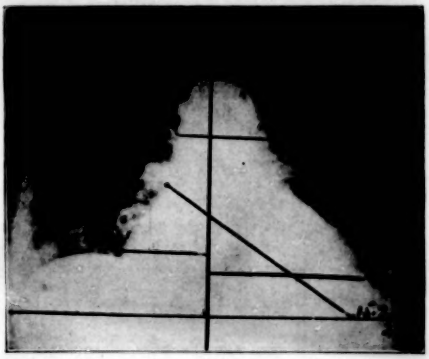

Fig. 4.—Appearance of heart, Feb. 1, 1924, six weeks after discontinuance of thyroid extract; basal metabolism, —20; Ml, 10.5; Mr, 5.9; L, 15.2.

weakness. She gave a history of having had heart trouble with dropsy for eleven years. She emphasized especially that for six years she had become very short of breath and purple after performing hard work. On one occasion, six years before, after doing much hard work during housecleaning, she had what was called a "heart stroke" by her physician. The symptoms consisted of orthopnea and cyanosis, with edema of the lower extremities. In addition there was a history of stubborn constipation, loss of hair, dry skin, puffy eyes, and cold extremities for at least eleven years. Two years previous to this admission, the patient was in this hospital with the same symptoms. The diagnosis was "myocarditis, chronic valvular disease, mitral insufficiency, myxedema."

The patient, who lay propped up in bed, breathed rapidly, deeply, and with the use of the accessory respiratory muscles. The skin of the face was sallow, with cyanotic patches over the malar prominences. There was cyanosis of the lips and below the finger nails. The eyes were puffy, with very small palpebral fissures, and the face was expressionless. There was marked pitting edema of the lower extremities. There was ascites in the abdomen, and the liver margin was 4 cm. below the costal margin in the mediolavicular line. There were fine

5. Zondek: München. med. Wchnschr. **65**: 1180, 1918; Deutsch. med. Wchnschr. **46**: 1239, 1920.
6. Wilson, F. N.: Cardiac Disturbance Associated with Diseases of Thyroid Gland, J. A. M. A. **82**: 192, 1754 (May 31) 1924.
7. Zondek (Footnote 5), four cases; Assmann (Münchener med. Wchnschr. **66**: 9, 1919), one case; Meissner (ibid. **67**: 1316, 1920), three cases.

and medium sized moist râles heard at both lung bases. The heart was enlarged in a characteristic form (Fig. 1). The heart sounds were fainter than the average normal. There was a systolic murmur at the apex, which was transmitted faintly to the axilla. There was no accentuation of the aortic second sound or the pulmonic second sound. The skin was dry and scaly, the hair dry, brittle and sparse. The fingers were enlarged from myxedematous infiltration so as to form a mild degree of "spade hand." The voice was hoarse and the speech slow. The pulse was small, and the rate 70 on admittance. The blood pressure was 110 systolic and 70 diastolic. The rate of temperature ranged as high as 98 and as low as 76.4 F. The blood showed a hemoglobin of 75, a red blood corpuscle count of 3,700,000, and a white blood corpuscle count of 10,000. The urine showed a trace of albumin at times. The basal metabolism was — 25.

The patient entered the hospital while I was on vacation. She was given tincture of digitalis and left at rest in bed for three weeks. The rest in bed and digitalis brought about very little improvement. On my return to the service, the diagnosis of "myxedema heart" was made. At this time teleroentgenograms were made which showed the heart outline of Figure 1.

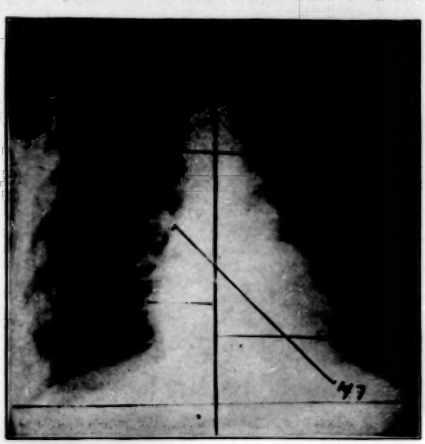

Fig. 5.—Appearance of the heart, March 12, five weeks after the beginning of thyroid extract for the second time: basal metabolism, + 5; Ml, 8.5; Mr, 4.2; L, 14.7.

This outline represents a heart enormously dilated in all chambers, thus giving a roentgen-ray outline characteristic of this condition and differing from the roentgen-ray outline of other cardiac conditions, excepting the outline in acute myocarditis (toxic myocarditis), and the outline where there is a mild degree of pericardial effusion. The roentgen-ray outline resembles somewhat that of pericardial effusion, but differs in being less broad at the base. Ml, 11; Mr, 8; T, 19; L, 17.[8] The diastolic volume of the heart, as determined from the silhouette area of the heart by Bardeen's[9] formula, was 950 c.c.; i. e., approximately twice the volume of the normal heart of a woman of this size.

The shape of the heart in severe myxedema is so characteristic that Dr. Rigler, the roentgenologist at the hospital, diagnosed the second and third cases in my series after examination of the roentgenogram alone. I want to point out once more how this heart differs in shape from the hearts of well known types of heart disease. In defects of the mitral valve there is a prominent bulging of the conus arteriosus and pulmonary artery in the second and third interspaces, which, with the displacement of the right auricular border to the right, is the most characteristic form change. In myxedema heart, this bulge is absent. In the valve defect of the aorta and in hypertension heart, the left ventricle dilates either exclusively or, in later stages, more than the right ventricle, so that there is usually a characteristic "sock" form, differing from the form of the myxedema heart, in which all chambers dilate equally. In the heart of acute myocarditis (toxic myocardium) we also have an equal dilatation of all chambers, so that outspoken cases of acute myocarditis show an outline similar to the outline of myxedema heart. When a pericardial effusion is of moderate degree or is absorbing, the outline of the heart shadow may resemble myxedema heart. In massive effusions, the base of the heart is much broader than in myxedema heart.

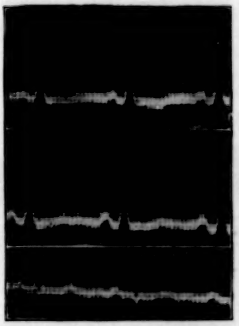

Fig. 6.—Electrocardiogram of first patient, Jan. 24, 1924; basal metabolism — 10 after discontinuing thyroid extract for five weeks; distance between ordinates, 0.04 second; no calibration curves were recorded, and I therefore am uncertain as to the value of the distances measured along ordinates. It is supposed that 1×10^{-4} volt = 1 mm.

Zondek[5] has pointed out that when myxedema hearts are examined with the fluoroscope the borders of the heart move very sluggishly. On examining our patient under the fluoroscope, we noticed also that there was only very slight movement of the borders during systole This is not at all strange. When the normal heart has dilated to twice its original volume, the excursion made by its borders, which corresponds to a systolic output equal to the normal systolic output, is about one tenth as great as the excursion made by the borders of the normal sized heart. This is simply a matter of geometry, and we do not believe that any conclusions as to the strength of contraction can be drawn from observation of the movements of the heart borders of an enormously dilated heart.

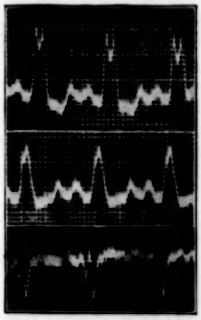

Fig. 7.—Electrocardiogram of first patient, March 26, 1924, after seven weeks of thyroid; basal metabolism normal.

Digitalis was no longer given the patient, and 8 grains (0.5 gm.) of thyroid extract each day was prescribed. The symptoms of heart failure, such as dyspnea, ascites and edema, slowly began to lessen, so that four weeks after the beginning of thyroid medication all dyspnea, lung edema and ascites had disappeared; edema of the lower extremities had nearly disappeared, and the liver had receded behind the costal margin.

8. Ml, distance from the median line to the farthest left border of the heart; Mr, distance from the median line to the farthest right border of the heart; T, total transverse diameter; L, longitudinal diameter.

9. Bardeen, C. R.: Am. J. Anat. 23:423 (March) 1918.

The dilatation of the heart had receded markedly also. Seven weeks after the beginning of thyroid medication, the shape and size of the heart was practically normal (Fig. 3): Ml, 8.6; Mr, 4.1; T, 12.7; L, 14.5. The diastolic volume of the heart was now 490 c.c., or 450 c.c. smaller than before treatment. The symptoms of myxedema cleared up at the same time. The basal metabolism rate was + 8 at the end of seven

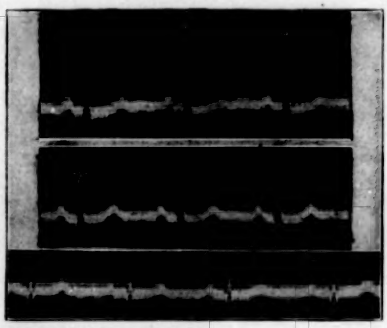

Fig. 8.—Electrocardiogram of first patient, Jan. 5, 1924, after patient had been off thyroid for two weeks and basal rate was —5.

weeks of thyroid extract treatment. The pulse rate became 80; the blood pressure, 120 systolic and 80 diastolic. The systolic murmur was still present. The patient was up and about the wards and quite active.

All thyroid medication was discontinued and the patient was kept in bed the greater part of the day in order to prove that lack of thyroid hormone was the cause of the symptoms of heart failure and the dilatation of the heart. Under these standardized conditions, dyspnea and pitting edema returned and the liver came down below the costal margin in seven weeks' time. The heart dilated (Fig. 4) until the teleroentgenogram showed Ml, 10.5; Mr, 5.5; T, 16; L, 15. The dilatation was not as great as on entrance to the hospital, but,

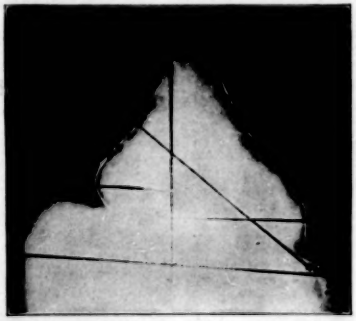

Fig. 9.—Appearance of heart of second patient, Jan. 2, 1924, before thyroid extract was given: basal metabolism, —21; Ml, 10.3; Mr, 5.7; L, 16.6; arch, 6.8. This picture has been retouched to bring out the heart outline.

as it had been continuously dilating, there is no reason to believe it would not have reached the previous size had the patient submitted to further withholding of the "good heart medicine." The basal rate became —20. The symptoms of dyspnea, enlarged liver and edema were not as severe as on entrance to the hospital.

Thyroid extract was again given, and in six weeks the heart size and shape (Fig. 5) was practically normal, the patient felt better than she had for years, and she importuned to be allowed to go home and get to work. All signs of myxedema had disappeared. The patient was very active now, helping the nurses in the wards. Only the electrocardiogram (Fig. 7) had not as yet returned to normal. The basal metabolism rate became + 5 per cent. The pulse rate was about 90. The blood pressure was now about 126 systolic and 70 diastolic. The systolic murmur was still present.

The electrocardiograms, taken shortly after entrance to the hospital and just a few days before Figure 1 was taken, show the typical Q-R-S group of intraventricular block. The intraventricular conduction time as represented by the length of the Q-R-S group was 0.18 second. T was flat or negative in Leads I and II, and was 1 mm. high in Lead III. The Q-R-S group in Lead III was negative. P was practically normal.

Zondek states that P is absent in myxedema heart. As he publishes only Lead I, and gives no account of the other leads, I doubt his conclusion very much. The electrocardiograms in our case indicate a profound disturbance of

Fig. 10.—Appearance of heart of second patient, Feb. 29, 1924, after 5 grains (0.3 gm.) of thyroid extract three times a day for five weeks: basal metabolism, —3; Ml, 8; Mr, 4.3; L, 14.5; arch, 6.2.

intraventricular conduction. After thyroid extract had been given, and on the day when Figure 3 was taken, the electrocardiograms were normal and all signs of intraventricular block disappeared. The intraventricular conduction time as measured by the length of the Q-R-S group became 0.08 second, or less than one-half the conduction time previous to thyroid treatment. The Q-R-S group in Lead III became positive. T became from 3 to 4 mm. positive in Leads I and II, and remained positive in Lead III. After the patient was taken off thyroid extract, and on the day when Figure 4 was made, the electrocardiograms again showed the characteristic splitting of the Q-R-S group; the intraventricular conduction time was 0.16 second—double the time necessary for conduction in the ventricle after thyroid medication had produced a basal rate of + 9, and T was flattened out or negative in Leads I and II. The Q-R-S group became negative in Lead III. When the patient was put back on thyroid extract again it was noted that the T wave in Lead I first became diphasic and then positive at a time when the split and prolonged Q-R-S group was still unaffected. Later this split and prolonged Q-R-S group became normal, and when the patient was discharged from the hospital her electrocardiograms were normal in all leads.

When the manuscript for this paper was finished, all the roentgen-ray prints and electrocardiograms for publication were missing. It was possible to make new copies from the original roentgen-ray plates, but as there were no other portions of the original electrocardiograms selected for publication available, it was necessary to substitute less characteristic ones. Figure 6 is the electrocardiogram taken, Jan. 24, 1924, when the patient had been deprived of thyroid extract for five weeks and the basal metabolism rate had dropped to — 10. The Q-R-S group is still practically normal. T is negative in Lead I. One week later the Q-R-S group became split and prolonged, as in Figure 7. Figure 7 was taken, March 26, at a time when the patient had again been on thyroid extract for seven weeks and the basal rate had become normal. The T wave in Lead I is now diphasic; the Q-R-S group is still split and remained split for about ten days longer, when the splitting disappeared. Figure 8 is the electrocardiogram taken, January 5, after the patient had been taken off thyroid extract for two weeks and the basal rate had just dropped to — 5. This electrocardiogram is practically normal, although the T wave in Lead I is not so high as in the electrocardiogram taken two weeks previously, when the rate was normal.

Gardner [10] has published the electrocardiograms of a patient with myxedema showing splitting and widening of the Q-R-S and negative T in Lead I. After thyroid medication, the Q-R-S group became normal and the T positive in Lead I. Two of my cases showed no signs of impairment of intraventricular conduction, but all my cases, as well as Zondek's, showed a negative T in Lead I, which disappeared on thyroid medication. From the few cases so far studied, I should conclude that the most characteristic change in the electrocardiogram in myxedema is the reversal of sign of the T wave in Leads I and II. The splitting and widening of the Q-R-S group may be found but is less common. The negative Q-R-S group in Lead III is found in severe cases with marked dilatation. All these changes are reversible on thyroid medication.

Figures 9 and 10 are the teleroentgenograms of a second patient with myxedema and mild symptoms of heart failure before (Fig. 9) and after (Fig. 10) thyroid medication. The electrocardiogram (Fig. 11) before thyroid was given shows the negative or flat T in Leads I and II and the negative Q-R-S in Lead III. After thyroid treatment (Fig. 12) T becomes positive in Leads I and II, and the Q-R-S group is upright. This patient's basal rate was — 21 before and + 2 after treatment. Our third case is being studied at present and will be reported later, when we have collected more material on both outspoken myxedema heart and the borderline variety, which our experience shows is not very uncommon when one looks for it.

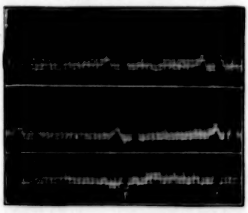

Fig. 11.—Electrocardiogram of second patient at a time when basal metabolism was — 21.

Dr. Kernkamp of the department of veterinary medicine of this university recently told me of an interesting disease among some young pigs. These pigs were not typical "hairless pigs," but were brought into the world apparently normal in every way. In a few months' time they developed signs of myxedema and dyspnea and died, apparently of heart failure. Dr. Kernkamp gave me one of these hearts for examination. Grossly, it was greatly dilated in all chambers, and the muscle fibers were pale and soft. Microscopically, the heart muscle appeared normal. There is very little doubt in my mind that these pigs have myxedema heart and that thyroid extract when given will cure them of the dyspnea which is a prominent picture of their disease.

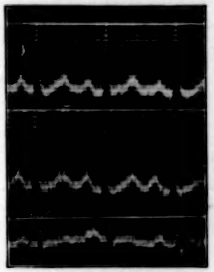

Fig. 12.—Electrocardiogram of second patient, after being on thyroid extract for five weeks; basal metabolism, + 2.

CONCLUSION

1. In myxedema there are definite objective signs as well as subjective symptoms of heart failure which may be present for many years, and which do not respond completely to the therapy of rest and digitalis but which are cured by thyroid medication.

2. Characteristic of "myxedema heart" are an enormous dilatation of all chambers of the heart and absence of negativity of the T wave of the electrocardiogram in Lead I. The dilatation of the heart disappears rapidly, and the T wave becomes positive under thyroid medication. During the transition from a negative to a positive T wave, we may get a stage in which the T wave is diphasic. A few cases show the split and prolonged Q-R-S group of delayed intraventricular conduction. This abnormality also disappears under thyroid medication. All of our cases showed a negative Q-R-S group in Lead III during the stage of marked cardiac dilatation.

3. The negative Q-R-S group in Lead III, thought by many to be characteristic of left ventricular hypertrophy, becomes positive in these cases after thyroid medication, thus proving for these hearts that a negative Q-R-S group in Lead III is not due to a preponderance of musculature of the left ventricle.

10. Gardner, E. L.: Journal-Lancet 44: 10 (Jan. 1) 1924.

Fainting.—One misbelief that is commonly met among the laity is that fainting is a prominent symptom of cardiac disease. You will agree with me, I think, that apart from the very rare Adams-Stokes syndrome, in which syncopal or epileptiform attacks arise as a result of cardiac pauses and cerebral anemia, fainting attacks are almost unknown as a feature of cardiac disease. Many of the persons who "faint" are in reality suffering from minor epilepsy, and you must all of you have been compelled to give this explanation to an anxious mother asking whether her child's heart is sound. Others, again, are suffering from a combination of circumstances which may induce such a pitch of cerebral anemia as to cause a "faint"; a combination of slow pulse with low blood pressure. Most often it is seen in adolescents, especially in those with vagotonia—i. e., with a vagus which is overeffective as a brake on the speed of the heart beat. Quite often, too, persons who have attacks of giddiness resulting from disease of the labyrinth miscall those attacks "fainting," and ask themselves whether they may not be the victims of heart disease.—Coombs, C. F.: Some Phenomena Counterfeiting Organic Heart Disease, *Lancet* **2**:1323 (Dec. 27) 1924.

RESTORATION OF THE SCALP

THE MANAGEMENT OF SKIN GRAFTS *

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CLEVELAND

Scalping, though fortunately uncommon, is a distressing accident, frequently followed, unless promptly and properly treated, by unsightly cicatricial deformities. Immediate restoration of the avulsed scalp has apparently never succeeded.[1] Some form of skin grafting is therefore inevitable in all cases of scalping.

Fig. 1.—Appearance of the large granulating scalp wound on admission of patient to hospital, seven months after scalping accident.

To the surgeon of today, skin grafting is an indispensible adjunct to his technical equipment, and he should make himself thoroughly familiar with (1) the many situations in which grafting may be used to great advantage; (2) the indications for the selection of the most available type of grafting in each instance, and (3) the best manner of applying and nursing the various forms of transplanted skin to a complete "take." The epithelization of burned areas may be accomplished by a simple procedure which should be known and practiced in every hospital. During my service at the Johns Hopkins Hospital we were constantly confronted with extensive granulating surfaces, particularly from burns, which had been carried along in other institutions or at home for months and even years in the vain expectation that epithelization would occur from the edges. The result, in most instances, was the development of extensive and terrible cicatrices and deformities which, when once formed, proved very difficult to eliminate or correct. Again, in the numerous and terrible injuries inflicted by the automobile, a knowledge of skin grafting may be the means of saving a limb, which might otherwise require amputation. The epithelization of osteomyelitic cavities by skin grafting is proving a definite aid in the treatment of chronic osteomyelitis cavities.[2] Skin grafting has also become a recognized step in the proper completion of many operative procedures.

The accompanying illustrations are presented, together with a brief account of the case, as an object lesson in the development of avoidable deformities, and to illustrate the plan of procedure employed to correct them.

REPORT OF CASE

M. S., a girl, aged 16, was admitted to the Johns Hopkins Hospital, May 16, 1922, seven months after an accident in a silk mill, in which her hair was caught in a swiftly revolving shaft. The entire scalp, including the skin over the forehead and the eyebrows, was torn away. Although she did not lose consciousness, she does not recall the slightest pain in connection with the accident. She was taken to a small hospital near by, where she was treated during the succeeding seven and one-half months by compresses wet with salt solution and surgical solution of chlorinated soda (Dakin's solution). This prolonged delay in the application of skin grafts was most unfortunate, as it permitted contractures to develop which increased the unsightliness of the original injury manifold (Fig. 1).

A roentgen-ray examination of the skull did not reveal any osteomyelitis. Having prepared the large, raw, granulating surface in a manner later to be described, small, deep grafts were applied on seven different occasions, 809 autografts being transferred with a loss of only seventeen (Fig. 2). (As pointed out in a previous article,[3] the use of isografts should be avoided whenever autografts are at all available.) Complete epithelization of the denuded area having been secured, attention was next directed toward correcting the very evident deformity of the eyelids, which prevented closure of the eyes. An incision was made high on the forehead, along the edge of the area on which skin was grafted, at about the location of the normal hair line. The thinly epithelized scar was pushed downward until it formed a redundant flap just above the eyes, and the resulting raw surface covered by one broad thick Thiersch graft from the thigh. This "took" and grew in its entirety and the patient left the hospital three months after admission with only a few small granulating areas (Fig. 3).

Six months later, the patient returned to the hospital, with still a few granulating areas, and it was apparent that the new epithelial covering was rather tight and easily traumatized. Accordingly, two coronal incisions were made, the edges separated for about an inch, and two Thiersch grafts applied. Complete epithelization was obtained with marked improvement in the scalp (Fig. 4). The addition of a wig enabled the young woman to take up her usual pursuits. A word of caution should be uttered as to the use of the wig. This should be worn over a snugly fitting washable skull cap, which can be daily washed and changed. The danger of haboring an infection in the wig capable of reinfecting the scalp was illustrated in this case. The patient returned to the hospital several weeks after the second admission with an attack of scalp erysipelas necessitating sterilization of an expensive wig. No further difficulty has been experienced since employing the washable caps.

Fig. 2.—Successive stages in the process of epithelization by small deep grafts removed from patient's thigh.

* From the Surgical Department of the Western Reserve University School of Medicine.

1. McWilliams, C. A.: Principles of the Four Types of Skin Grafting, J. A. M. A. 83: 183 (July 19) 1924.
2. Reid, M. R.: The Use of the Large Reverdin Grafts in the Healing of Chronic Osteomyelitis, Bull. Johns Hopkins Hosp. 33: 386 (Nov.) 1922.
3. Holman, Emile: Protein Sensitization in Isoskingrafting, Surg., Gynec. & Obst. 38: 100 (Jan.) 1924.

TECHNIC

The plan of procedure here adopted is one that is applicable to large granulating areas of whatever cause, particularly burned areas. Our first object in the treatment of such cases is the epithelization of the denunded area by the use of closely placed, small, full thickness grafts. The application of Thiersch grafts on a granulating area is attended by considerable danger of losing the graft. Wherever fresh, raw defects are encountered, as in the removal of large, malignant tumors,

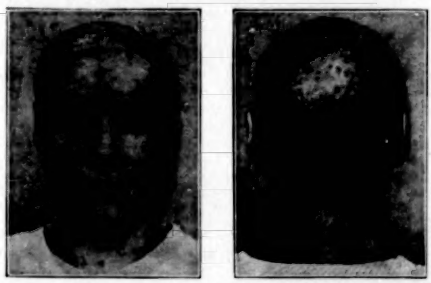

Fig. 3.—Appearance of patient three months after beginning treatment.

Thiersch grafts may be immediately applied, following complete hemostasis, with the confident expectation that a complete "take" will follow. However, in the presence of a weeping, granulating area, the exudate, which is invariably present, will tend to accumulate under the graft, and, by raising it from the surface, prevent adhesion to the underlying raw area, and consequently vascularization cannot occur. Small, deep grafts, on the other hand, invariably adhere and grow on a granulating surface. It therefore appears advisable, first, to obtain epithelization by means of small deep grafts, and then to improve the result so obtained by Thiersch grafting at a later date, when, fresh, raw, clean surfaces may be prepared on which large grafts may be safely applied. Similarly, complete epithelization by small, deep grafts will greatly minimize the danger of infection, which is the greatest obstacle to the success not only of Thiersch grafts, but also of Wolff grafts and pedicle flaps. Accordingly, when the use of the latter two is anticipated, complete epithelization, if not already present, should first be obtained by means of small, deep grafts.

The preparation of the denuded granulating surface for the reception of the small, deep grafts is most important. Pale, boggy, exuberant, "sea-weedy" granulations are usually attributable to a badly controlled surface infection. To minimize this condition, flat gauze compresses dripping wet with surgical solution of chlorinated soda may be applied every one or two hours during the day, and every four hours at night, until the excessive granulation tissue has been cut down to a firm, red, well nourished base. The solution attacks the exuberant, ill nourished granulation tissue as it does necrotic tissue, and under the constant application of this dissolvent, the excessive tissue rapidly disappears. A firm base having been obtained, salt solution compresses are applied every two hours for twelve hours before the application of the grafts. The armamentarium for the transfer of small, deep grafts to the denuded surface is very simple. The grafts may be obtained from any portion of the body, the thigh being usually the most available; but the abdominal wall, back or arms may be used to good advantage, if necessary. The superficial layers of skin are infiltrated with 0.25 per cent. procain. With the aid of a thin straight milliners' needle held in a straight hemostat, the skin is elevated and a small whole thickness graft removed, about the size of a dime, and transferred to the denuded surface. The needle is passed through an alcohol flame for sterilization and again used to transfix and transplant another graft.

The after-care of the small grafts on granulating surfaces requires constant attention: immediately after the application, they are exposed to the air for about six to eight hours, well protected in this interim by a pasteboard box strapped firmly in place with adhesive plaster, and large enough to prevent any accidental rubbing of the grafted area. This permits a firm adherence between the graft and the underlying granulation tissue. After the exposure to air, the grafts are covered by a single layer of fine gauze extending well beyond the raw grafted area on all sides, thus enabling one to fix it in place by a thick layer of zinc oxide ointment applied to the gauze overlying the good skin and, if necessary, by narrow strips of adhesive plaster. This single layer of gauze protects the grafts from being displaced, and enables the exudate to pass through the meshes of the gauze and be absorbed by the overlying salt or surgical solution of chlorinated soda compresses. During the first twenty-four to forty-eight hours, these compresses are well moistened every two to four hours with salt solution or surgical solution of chlorinated soda and changed only once or twice a day by the physician in charge, who must be very painstaking in the removal of the compress so as to avoid displacing the grafts. The protective layer of gauze remains in place.

After seventy-two hours, the grafts are usually adherent, and vascularization is apparent from the pinkish color of the graft or dark, discolored areas in

Fig. 4.—Final appearance of patient, ten months after beginning treatment.

the center of the graft. These darkened areas are attributed to small hemorrhages in the epidermis through wounds in the vessel walls caused by the transfixion of the graft by the needle at the original operation. Such a hemorrhage is proof that vascularization of the graft has begun.

After the change in the appearance of the grafts, the protective layer of gauze may be removed and compresses applied directly to the grafted area. Compresses may be alternated with cellosilk or rubber protective

strips, the criterion for change of treatment being the character of the granulation tissue between the grafts; exuberant, pale granulation tissue indicates a badly controlled surface infection as before, and more vigorous use of surgical solution of chlorinated soda is indicated; i. e., a change of compresses every hour instead of every two hours. The compresses should always be dripping wet when applied. The odor of the solution is not the effective factor in destroying germs; it is the actual contact between the germ ridden tissue and the solution that accomplishes sterilization.

If the granulation tissue is level with the grafts, a nonadherent dressing, such as perforated cellosilk, may be used to advantage. Occasionally the use of silver nitrate sticks becomes necessary to cut down the exuberant granulations, care being needed to avoid touching or cauterizing the newly formed epithelium.

Thiersch grafts, when applied to fresh clean surfaces, are most successfully treated by covering them immediately after their application with a layer of very thin squares of silver foil, which in turn are covered by a gauze dressing that cannot shift, held in place by starched crinoline or plaster-of-Paris bandage. This dressing is allowed to remain fixed and untouched from eight to ten days unless indications for its removal supervene, such as an unexplained, persistent fever suggesting an underlying infection. At the first dressing everything is removed except the layer of silver foil. This is covered with a thick layer of petrolatum, and this, in turn, with a layer of thin rubber tissue to prevent the petrolatum from being soaked up by the overlying gauze. At the next dressing, the foil is removed without difficulty.

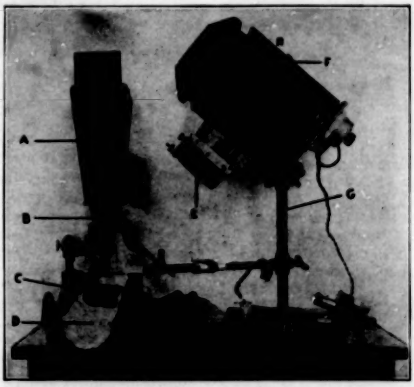

Fig. 1.—Apparatus for capillary observation and photography: *A*, camera extension; *B*, camera; *C*, molding clay; *D*, immobilizing box; *E*, water cell; *F*, lamp house; *G*, steel supporting upright. The camera and camera extension are removed and the microscope replaced during capillary observation.

The first appearance of the wound is not always encouraging, but it is quickly cleaned up and improved by the application of hot, moist compresses for from twenty-four to forty-eight hours. Excessive granulation tissue may need occasional careful cauterization with a silver nitrate stick. The spreading epithelium must not be damaged but encouraged by the use of a nonadherent dressing, such as cellosilk or perforated rubber tissue. The care of a skin grafted area requires nice surgical judgment, and, properly executed, provides a fascinating study in the epithelization and healing of wounds.

Action of Baths on Autonomic Nervous System.—The autonomic nervous system is divided into three parts, each of which is called into play by certain hydrotherapeutic measures. The bulbar autonomic is influenced by bathing the face, and possibly, by throat compresses. The thoracic outflow, or sympathetic proper, is aroused by the majority of general and local treatments; and the sacral part is influenced by hip baths, douches, and irrigations.—C. F. Sonntag: *Proc. Roy. Soc. Med.* **16**:9 (Aug.) 1923.

PHOTOMICROGRAPHIC STUDIES OF MORPHOLOGY OF SURFACE CAPILLARIES IN HEALTH AND DISEASE

I. THE ANATOMY OF NORMAL SURFACE CAPILLARIES AND A PHOTOGRAPHIC METHOD OF THEIR OBSERVATION AND RECORDING *

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SAN FRANCISCO

My purpose in this paper is to introduce a photographic method of recording the form and size of surface capillaries, and the technic is here applied to the study of a single case. It is, however, obvious that no conclusions as to the number of normal variations can be reached from the examination of these few photographs. An attempt will be made at a later date to classify normal capillary morphology, and its variations, from photographs taken from a large series of proved normal individuals. It may be said in passing that, without knowledge of these variations, many capillaries that appear grossly abnormal will fall into normal groups. A knowledge of these variations in form is, of course, necessary to the correct appreciation of any altered morphology that actually may be present in pathologic conditions.

It has been very difficult to record faithfully capillary structure as observed in normal and diseased conditions by other than photographic methods. Camera lucida drawings are not wholly satisfactory because a sufficient immobility of the part examined is difficult to maintain over the requisite period of examination. Even when working conditions were favorable for drawing, it was found that the recording of those capillaries which were slightly out of focus required much personal equation, and the results obtained therefore were open to much justifiable criticism.

HISTORY OF CAPILLARY OBSERVATION

Hueter,[1] in 1879, observed capillaries in the human lower lip with a lens magnification of 25 and artificial illumination. In this manner, he made noteworthy observations of pathologic conditions of the capillaries and described his findings in certain acute infectious diseases. Müller [2] ascribes to him first place in this field. Unna, in 1891, rendered opaque skin transparent by applying oil over the area he examined. The great con-

* From the Departments of Surgery and Anatomy of the University of California Medical School and the George Williams Hooper Foundation for Medical Research.

1. Hueter, C.: Die Cheilangioscopie, eine neue Untersuchungsmethode zu physiologischen und pathologischen Zwecken, Centralbl. f. d. med. Wissensch. **13**: 225-227, 1879.

2. Müller, Otfried, Weiss, Niekau and Parrisius: Die Kapillaren der menschlichen Körperoberfläche in gesunden und kranken Tagen, Stuttgart, 1922.

tribution, however, was made by the American, Lombard, working in von Frey's laboratory in Würzburg. Lombard [3] applied glycerin to the skin at the base of the human nail, making its outer layers transparent, and he was able to study accurately pressure changes in the arterioles, venules and capillaries in this region. In 1912, one year after the work of Lombard, Müller [5] turned his attention to the study of the morphology of capillaries with the view of determining a true division

Fig. 2.—Papillary layer of dermis with capillaries and superficial subpapillary vessels (Spalteholz): *A*, subpapillary arteriole and venule; *B*, dermal papillae; *C*, dermis; *D*, subpapillary arterial and venous plexuses; *E*, capillaries.

of capillary pathology. In this he interested his associates Landerer, Weiss,[4] Niekau [5] and Parrisius, and it is from their work that much of the material in this series of papers is drawn. These investigators studied capillaries in all parts of the human body, although most of their work was done in observation of the capillaries in the nail-bed.

METHOD OF OBSERVATION

Microscopic observation of skin capillaries depends in general on several factors: (1) rendering transparent those layers of the skin that lie superficial to the capillary loops; (2) the observation of these vessels by means of a suitable reflected light; (3) their microscopic study with an instrument of suitable range of magnification, and (4) an adequate apparatus for maintaining immobile the part to be examined.

1. *Clearing of the Superficial Layers of the Skin.*—Many varieties of oil have been applied to the skin to make it transparent. This clearing process is, of course, not clearing in a histologic sense, since a clearing oil can permeate only dehydrated tissue, and such a tissue is not viable. The clearing effect is due to the filling in by the oil of the irregular surfaces of the skin. This smoothing-out process allows the incident light to be economically directed to the depths without the loss from divergence that the mass of irregularities would otherwise occasion. Cedar oil has proved most satisfactory, as much because of its viscosity as because of its index of refraction. Its consistency is such that it does not readily flow and leave uncovered certain of the more raised areas, a circumstance that results in annoying light reflexes. We have followed Schur's [6] suggestion of using small cover-glasses to obtain a more even distribution of the oil.

The depth to which transparency obtains varies greatly in individuals, and it is not uncommon to find persons in whose nail-beds capillaries can be scarcely seen even when the lighting conditions are most favorable. In other normal subjects, however, one can make out with ease, not only the capillary loops, but the subpapillary arterial and venous plexuses, and record conditions of blood flow in these deeper channels.

2. *The Source of Illumination.*—We have used a great variety of light sources, including carbon arcs and electric bulbs of varying sizes. The most satisfactory degree of illumination is obtained by installing a 1,000 watt electric globe in an Edison lamphouse. A silvered reflector is mounted behind the lamp, while immediately in front is a series of convex lenses. A Bausch and Lomb water cell is attached to the mounting of the lens system and serves the twofold purpose of absorbing the intense heat generated by the globe and supplying the mechanism for containing a liquid color filter. The lamphouse is mounted on a steel upright, which derives its stability from a heavy iron footpiece. All adjustments for position are possible. An additional convex lens is attached to another arm from the steel upright, and this lens concentrates the collected rays into more definite focus on the spot to be observed.

3. *Microscope and Range of Magnification.*—The Zeiss binocular microscope fitted to stand XB has proved very satisfactory, not alone because of its stereoscopic advantages and its attendant ease of observation, but also because of the useful range of magnification it affords. With eyepieces two, three and four and objectives A_0, A_2 and A_3 one has a range from 15 to 61 diameters. The use of eyepiece 4 and objective A_3 give a magnification of 61, one useful for observation. The footpiece of the stand is clamped to the top of the table to give increased stability.

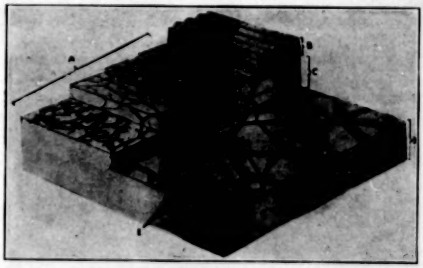

Fig. 3.—Reconstruction of the blood vessels of the skin: *A*, subpapillary arterial and venous plexuses; *B*, epidermis; *C*, dermis; *D*, subcutaneous tissue; *E*, subcutaneous arterial and venous plexuses. The large trunks in the subcutaneous tissue form plexuses at the border zone, between the dermis and the deeper layers. Arterial and venous branches from these plexuses form the subpapillary plexuses of the dermis. The capillaries of the papillae are derived from the arterioles and venules of the most superficial subpapillary plexuses. (Spalteholz.)

The working distance, or the distance between the objective and the object, is considerable and varies, according to the lens combinations, from 30 to 54 mm. This working space allows one to arrange the object easily, as well as giving sufficient free space for the rays of light to fall on the area illuminated at about an angle of 45 degrees.

3. Lombard: The Blood Pressure in the Arterioles, Capillaries and Small Veins of the Human Skin, Am. J. Physiol. **29**: 335-362, 1912.
4. Weiss, E.: Ueber mikroscopische Kapillarbeobachtung, Wien. klin. Wchnschr. **33**: 840-843, 1920; Beobachtung und micrographische Darstellung der Hautkapillaren am lebenden Menschen, Deutsch. Arch. f. klin. Med. **129**: 1-38, 1916.
5. Niekau, B.: Anatomische und klinische Beobachtungen mit dem Hautkapillarmikroskop, Deutsch. Arch. f. klin. Med. **132**: 301-334, 1920.
6. Schur, H.: Haut und Hautkapillaren in microperiskopischen Bilde, Ztschr. f. angew. Anat. u. Konstitutionslehre **8**: 193, 1920.

The three rack and pinion adjustments that the instrument affords give rotation about four axes, and these mechanisms allow of little deviation, once good adjustments are obtained. The possibility of getting lateral motion with the instrument in focus makes it more valuable.

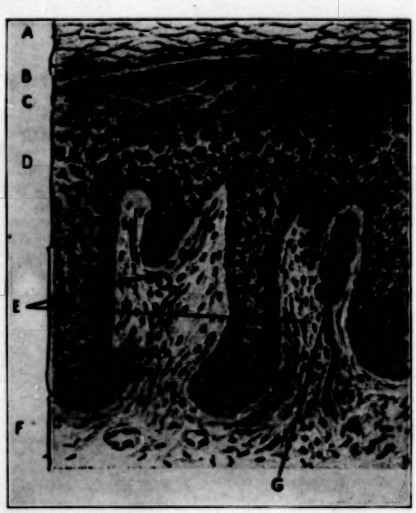

Fig. 4.—Vertical section through the epidermis and the superficial portion of the dermal layers of the skin: *A*, stratum corneum; *B*, stratum lucidum; *C*, stratum granulosum; *D*, stratum germinativum; *E*, papillae of dermis; *F*, dermis; *G*, tactile corpuscle. The strata corneum, lucidum, granulosum and germinativum must be rendered transparent before the capillaries in the papillae of the dermis can be seen. The capillaries in the two papillae are not injected and therefore are not well seen (Schäfer).

4. *Means of Immobilizing Area Observed.*—An oblong wooden box was constructed, open on top and partially open on one end and about half filled with loose sand. The sand is kept to a certain level by means of a heavy piece of muslin tacked to the box above the sand, an expedient that allows of clean partial molding of the part to be observed. The area examined is further immobilized in molding clay. This clay is pliable, yet holds its consistency under heat from the body. Sandbags placed along the sides of the part complete the immobilization. In this manner, the patient is comfortable, and an examination of the same area can be carried on over long periods. A high degree of immobilization is especially desirable in the long exposures sometimes necessary in photography.

Areas Observed and Photographed.—Practical considerations have led to the adoption, whenever possible, of the area of skin at the base of the human nail for the purpose of capillary observation.

ADDITIONAL DETAILS IN PHOTOGRAPHIC TECHNIC

1. *Camera.*—We have had greatest success in using one barrel of the Drüner stereoscopic camera in connection with the stand for the binocular microscope. There is the decided advantage in favor of this instrument that the camera and the microscope are interchangeable, and that the paired objectives of the microscope give the magnification for the camera. The body of the camera resembles a truncated pyramid, on the larger base of which is the frame for receiving the focusing screen and the plateholder. The smaller base contains the slide to hold the paired objective. The shutter is set by pulling a cord, and the release is made either pneumatically or mechanically. Advantage has not yet been made of the stereoscopic feature of the camera.

The magnification obtained by using the strongest of the objectives, A_3, was not strong enough in most instances to admit of accurately focusing the capillaries on the ground glass. Since we could not increase this magnification of the objectives, this difficulty had to be overcome by increasing the bellows' length. This was done by adding a 14-inch truncated pyramid extension, following out the lines and angles of the original camera. A Graflex ground glass and plate holder were adapted to the broader base of this extension, and photographs of 17 diameters were obtained. This assembly has proved very satisfactory because of the stability and the ease of focusing it affords. The focusing is obtained by adjusting a rack and pinion which fixes the camera to the stand.

Fig. 5.—Vertical section through the skin, showing the papillae: *A*, capillaries in papillae of dermis; *B*, epidermis; *C*, subpapillary vessel; *D*, dermis. The blood vessels are injected, and the papillae of the dermis contain one or more capillaries, which bud from the deeper vascular trunks in the subpapillary layers in the dermis. (Stöhr.)

Exposure and Plates: Standard Orthonon and Wratten and Wainwright Panchromatic plates have

given good results and are used over a varying range of exposures. The particular exposure with the light source mentioned above, and a suitable yellow-green liquid filter, is about twelve to fifteen seconds.

2. *Final Magnification.*—The magnification obtained on the original negatives is 17. These negatives are enlarged to 48 diameters for final reproduction.

3. *Color Filter.*—These vessels should be photographed through that colored filter which gives them the greatest amount of contrast with the background; namely, the color that makes them appear as black as possible. Green is the satisfactory color for giving contrast to the red of the capillaries. The green liquid filter consists of a solution of potassium bichromate and copper sulphate in water.

ANATOMY OF THE SKIN WITH REFERENCE TO ITS BLOOD SUPPLY

The skin consists of an outer layer, or "epidermis," and a deeper layer, or "dermis."[7] The dermis is a vascular connective tissue membrane of considerable thickness and mesodermic in origin, while the epidermis is ectodermal in origin and composed of epithelial cells and arranged in a number of layers.

Fig. 6.—Capillaries in the nail bed: *A*, twisted capillary; *B*, arterial capillary limbs; *C*, venous capillary limb; *D*, vein in subpapillary plexus. Large numbers of variations in length, visibility and breadth of vascular limbs are made out.

1. *The Epidermis.*—The thickness of the epidermis varies greatly. In those portions of the skin where the papillae of the corium are in rows, the epidermis presents ridges on its surface that correspond to these rows of papillae. The firm and transparent superficial part is the stratum corneum, while the deeper, more recently formed and opaque portion, is stratum germinativum. Between these two layers are the stratum granulosum and the stratum lucidum. The under, or attached, surface of the epidermis, the stratum germinativum is molded on the adjoining surface of the dermis, and presents furrows that exactly correspond with the papillary eminences of the dermis.

2. *The Dermis.*—The vascular and fibrous dermis is covered and protected by the nonvasoular epidermis, and is attached to the parts beneath by a layer of areolar tissue called "subcutaneous." Its fibers are of the white variety of connective tissue and, in the papillae, are very delicate and have a vertical arrangement. The dermis is divided into two layers for purposes of convenience: (*a*) the papillary and the (*b*) reticular layer. The reticular layer is the more deeply seated, and takes no part in the construction of the papillae. The papillary layer is extended to form the papillae, and receives the terminal expansions of the blood vessels.

Fig. 7.—*A*, twisted arterial capillary limb.

Superficial Markings: The free surface of the dermis is marked in various places with larger and smaller furrows, which also affect the superjacent epidermis. The fine curvilinear ridges correspond in general arrangement to the rows of the papillae, and these form patterns that do not alter as growth advances.

Ridges and Papillae: The ridgelike projections of the substance of the dermis into the under surface of the epidermis have an uneven surface, and this unevenness takes the form in many parts of prominent finger-shaped eminences known as "papillae." These papillae fit into corresponding pits in the superjacent layers of the epidermis, and are probably of use in bringing the superficial blood vessels of the cutis into closer connection with the epidermis. The papillae are conical and often cleft into two or more points. On the ridges, they are placed commonly in double rows with a space

Fig. 8.—Twisted arterial capillary limb.

free from papillae between them. Fine blood vessels enter most of the papillae, forming either a single capillary loop in each, or dividing into two or more capillary branches, according to the size of the papilla.

Blood Vessels: The arteries divide in the subcutaneous tissue as the "subcutaneous plexus." Their

7. Schäfer, E. A.: Textbook of Microscopic Anatomy, London, Longmans, Green & Co., 1912.

branches pass from this deep expansion toward the papillary layer of the dermis, where they divide again. This division and anastomosis forms the subpapillary plexus. Superficial arteries and veins leave this plexus which give off fine looped branches or capillaries into the papillae.

Fig. 9.—Twisted arterial capillary limb.

CAPILLARY ANATOMY AND CAPILLARY FLOW IN THE HUMAN NAIL-BED

An excellent view of the capillary circulation is obtained by placing a drop of oil on the skin at the base of the nail, covering it with a cover-glass, and observing the area by a strongly condensed beam of incident light. In this region of the body, the papillae of the dermis are arranged horizontally, the vessels contained in them being therefore seen in profile. In other surfaces of the skin, it is difficult to see more than the tips of the capillary loops, since the papillae on such surfaces are arranged more or less vertically. The vessels contained in them cannot therefore be seen throughout their whole length, but for only a small distance of their course.

One cannot but be struck with the variations that the capillaries in the nail-bed of an average normal individual present. These variations are present in size, shape and number. They may take on many bizarre shapes. Either or both of the limbs of the loops may be twisted or displaced and the length of the limbs in normal cases varies within wide limits. Moreover, there is great variation as to the depth of vision afforded through the epidermis into the dermis. Capillary limbs or individual capillaries may in some persons be so delicate as to be scarcely visible, while in others, one may easily see the arterial and venous subpapillary plexuses. Giant capillaries are often present in the orthodox hairpin-like form. Individual loops differ in length, spread of the arc and the caliber of the vessels that comprise them.

The venous limb of a capillary loop is usually much broader than the arterial, and can be traced more often into the subpapillary vessel or plexus. The capillaries in the nail-bed vary but little from one examination to another. There is, however, marked variation in the speed of the blood flow in them. When the flow is slow, the white blood corpuscles may be seen as vacant areas in the otherwise homogeneous stream, and spaces are occasionally seen that are free of all blood cells.

The accompanying illustrations were made from the nail-beds of a hand of a normal person, and represent the capillaries and vessels found in the papillae and subpapillary areas immediately proximal to the nail. The background of these vessels viewed with white light is rose-colored, a result, doubtless, of the transmission of the color of the vessels themselves.

240 Stockton Street.

FRACTURE DISLOCATION OF THE HEAD OF THE HUMERUS*

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Previous to the period of open operation, fracture dislocation of the head of the humerus was treated by one of three methods: (1) An attempt was made to reduce the head by direct pressure; (2) this failing, union was sought with the head in its dislocated position; (3) a false joint was produced at the fracture site. When the last method was employed, occasionally the head became absorbed, or would become necrotic and finally find its way to the surface, this being sequestrated.

Following the development of aseptic surgery, McBurney devised a special hook to be inserted in the fragment in order to reduce it by traction. He[1] collected from the literature, including foreign reports, 117 of these cases and, subsequent to his report, Mason has reported an additional thirty-six. From this, the relative infrequency of this serious combination of lesions is at once apparent.

Reduction being impossible by the McBurney method, it became common practice to remove the head of the bone and attempt to fit the shaft within the glenoid

Fig. 1.—Fracture dislocation of the head of the humerus (before operation).

cavity. This procedure is still in use, and is no doubt often necessary; but the end-results of the operation are frequently far from desirable.

* Read before the New York Academy of Medicine, Surgical Section, May 2, 1924.
† From the Department of Traumatic Surgery, New York Post-Graduate Medical School and Hospital.
1. McBurney: Ann. Surg., April, 1894.

The symptoms and physical signs of this injury do not differ greatly from those seen when the two lesions occur separately, and nothing relative to the diagnosis will be discussed in this report. As might be expected, an injury severe enough to produce both a fracture and a dislocation naturally causes a much more severe trauma to the soft parts, and adds greatly to the difficulty of the treatment.

Cases have been reported in which, following a satisfactory reduction by open operation, the head again became dislocated and was reduced by means of traction without any further operative intervention.

REPORT OF CASE

W. H., a truck driver, aged 28, fell about 20 feet into an elevator shaft Dec. 8, 1923, and struck directly on the left shoulder, also fracturing the right forearm. He was operated on the following day at Beekman Street Hospital. An 8 inch incision was made along the anterior margin of the deltoid muscle, a few fibers of which were separated, but not cut. The

Fig. 2.—Condition of joint after operation.

tendon of the biceps muscle was found lying between the fragments. The head was completely dislocated below and anterior to the glenoid cavity. There was a rent in the joint capsule on the upper posterior surface, and the entire joint was filled with blood.

An attempt was made to reduce the dislocated head by pressure and by traction, but this was impossible. The joint was then opened on the anterior surface by an incision one-half inch in length, and with a blunt curved periosteal elevator, the torn fragments of the capsule and cartilage were pushed away. Using this instrument as a pry, with the end placed against the margin of the glenoid cavity, the head was rotated half a turn, on the instrument, and easily snapped back into place. The opening was then closed and a reef taken in the capsule, so as to make the relaxed anterior portion very taut.

Some loose fragments of bone were removed and holes drilled through the head and through the shaft, which had ridden upward past the glenoid cavity and nearly pierced the skin above the shoulder joint (Fig. 1). The shaft was pulled downward and the fragments sutured with heavy kangaroo tendon. The biceps tendon was placed above the suture line and the wound closed in the usual manner.

Because of the outward rotation of the shaft, the arm was placed in a plaster cast as illustrated (Fig. 3) in a position which would not put any stress on the bone sutures.

A few days after the operation, the upper portion of the cast was removed from the forearm and motion in the hand and wrist begun, and on December 30 the entire cast was removed, the patient being placed in a "traction suspension" apparatus, thus allowing motion of the elbow and shoulder and the beginning of physiotherapy.

Fig. 3.—Arm placed in plaster cast on account of outward rotation.

January 10, one month following the operation, all appliances were removed and the patient given a sling. Physiotherapy was continued, and active motion encouraged by having the patient climb with his hand up the standard of an irrigation stand, marks being made to denote each day's progress, in voluntary abduction. I believe this to be better than climbing up a wall, as this permits the patient to grip his hands about the standard and encourages more extensive movements.

The end-results were excellent. Rotation was very little impaired, and full abduction was slightly limited.

COMMENT

In injuries about the shoulder, it is noticeable that abduction is often greatly delayed, even in those cases in which the fracture is below the deltoid attachment, or in regions which would not seem to involve this muscle. Careful examinations of the cutaneous area supplied by the circumflex nerve do not show any involvement, and an explanation of the failure to abduct is not at once apparent. However, the deltoid muscle, from its position, no doubt, acts as a cushion in injuries in and

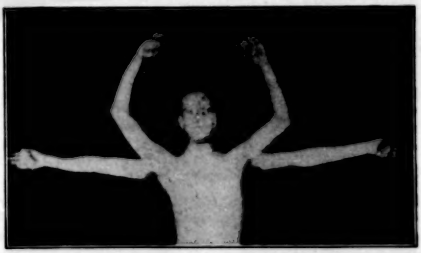

Fig. 4.—End-result.

about the shoulder joint, and there is no doubt that a large number of the muscle fibers are severely lacerated and contused in traumatism of this sort, and may thus help to account for the delay in obtaining abduction, after all the other motions have apparently been restored.

What would have been a worthless or greatly impaired shoulder joint has in this case been restored

almost to its normal function. No conclusions can be drawn from a single operation, but I believe that the end-results illustrate the possibilities of what may be accomplished in fracture dislocations of the shoulder joint.

565 Park Avenue.

THE HAZARD OF SURGICAL ANESTHESIA WITH SYPHILIS OF THE BRAIN *

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AND
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That syphilis bears an important relationship to the work of surgeons has been recognized for many years. As early as the sixteenth (Anatus Lusitanus [1]) and seventeenth (Saviard [1]) centuries it was pointed out that in patients with syphilis, wounds healed much more slowly than similar lesions in healthy persons. Subsequent similar experiences of other writers have led to the general acceptance of this time-honored observation, so that at present the local effects of active syphilis are well known.

Fig. 1 (Case 1).—Section of leptomeninges and cortex: The infiltration in the pia-arachnoid and in the perivascular spaces within the brain substance consists of round and plasma cells.

Aside from its influence on the healing of wounds, syphilis offers to the surgeon an entirely different concern in respect to its general or constitutional effects on the patient. Death in syphilitic subjects following relative minor surgical procedures has occurred in all likelihood in the practice of many surgeons, although reports of such fatalities are exceedingly few. Treves [2] attributes the loss of life in this type of case not to the operation per se but to a "syphilitic taint that has undermined the patient's constitution, making him unable to withstand the sudden strain to which he is subjected." This explanation is an unsatisfactory one from a pathologist's point of view, and can hardly be accepted until all other more definite causes have been considered and eliminated.

Fig. 2 (Case 1).—The perivascular lymphangitis of syphilis, which is particularly marked at the bases of sulci.

That death may be the result of an unsuspected or unrecognized syphilis of the brain is exemplified by the following two reports:

Case 1.—V. E., a colored woman, aged 27, was admitted to the gynecologic service of the Cook County Hospital complaining of backache, headache and leukorrhea, which had distressed her periodically for three years. An inventory of symptoms by systems failed to elicit any further disturbances except for dizziness at times. Although she had no knowledge

Fig. 3 (Case 1).—From the region of the aqueduct of Sylvius: The largest vessel is cut tangentially; the lumens of two of the vessels in the field are virtually obliterated by a proliferation of the endothelial lining cells and by the perivascular exudate.

* From the pathologic laboratories of the Cook County Hospital.

1. Quoted by Michhailoff, N. N.: On Operations in Syphilitics, Voyenno-Med. J. **193**: 96-156, 1898.

2. Treves, quoted by Mason, R. D.: Syphilis in Abdominal and Rectal Surgery, Am. J. Clin. Med. **14**: 51-54, 1907.

of venereal infection, she stated that she had been treated with intravenous medication at one time. The marital history was of significance, in that during twelve years of conjugal life she had three spontaneous miscarriages at four, five and nine months, respectively, in the order named. She was well nourished, well developed, and presented no evidence of syphilis externally. The gynecologic findings were those of a third degree retroversion and a profuse cervical discharge. An operation was performed, Nov. 9, 1921. The anesthesia included a preliminary alkaloid adjuvant consisting of morphin sulphate, 1/6 grain, and atropin sulphate, 1/100 grain, and ether inhalations, which were begun at 3 and concluded at 3:50 p. m. The round ligaments were shortened and the appendix was removed. The condition of the patient was recorded as good immediately following the operation by the anesthetist and a few minutes later by the recovery ward nurse. At 7:20 p. m., approximately three and one-half hours after the completion of the operation, a resident physician, who had been summoned, noted the respirations to be stertorous and found the pulse of fair volume, slow and irregular. Ten minutes later the respiratory rate had dropped from 25 to 5 per minute, whereupon artificial respiration and hypodermic stimulation were resorted to but proved ineffectual. The cause of death was ascribed to "some intracranial involvement." The necropsy (E. R. L.) disclosed practically nothing in the way of disease in either the thoracic or abdominal cavities. The recently sutured abdominal wound was clean. There was no free blood in the peritoneal cavity. Aside from the essential changes associated with the recent pelvic operation, the noteworthy alterations were limited to the brain. The formaldehyd-hardened brain was examined by Dr. C. B. Semerak, whose report follows:

Grossly, the cerebral convolutions were very flat and the sulci almost completely obliterated. The veins of the leptomeninges were empty, and their finer radicles were invisible. The leptomeninges were transparent. The arteries at the base of the brain were thin and collapsed. There was a deep foramen magnum pressure furrow. The surfaces made by sectioning the hardened brain in the usual way were pale, and the stippling was less pronounced than usual. The lateral ventricles measured 6 mm. transversely at the anterior commisure; the ependymal lining was smooth. The choroid plexus was pale. In the superior fibers of the pons there was a brown discoloration 3 by 1.5 mm. in size, extending for 3 mm. anteroposteriorly. It was situated on the left side immediately adjoining the median raphe. The gray matter in the spinal cord was well differentiated from the white matter. There were no other changes.

The sections of the brain stem, internal capsule, lenticular and caudate nuclei, thalamus, precentral and postcentral gyri, corona radiata, base of the brain with optic chiasma, and tuber cinereum were all edematous. There was a marked perivascular lymphocytic infiltration about almost all the vessels in all the sections, involving both arteries and veins of the gray and white matter and also the leptomeninges (Fig. 1). This infiltration was particularly conspicuous about the bases of the sulci of the cerebral cortex (Fig. 2). In many instances the lumens of the vessels were half filled with lymphocytes and endothelial cells, and in some completely obliterated (Fig. 3). The leptomeninges over the precentral and postcentral gyri and the interpeduncular spaces were thickened by more or less dense masses of lymphocytes, some endothelial and plasma cells. The large ganglion cells of the central nuclei and the cortex were very pale, their nuclei swollen and vesicular, and in many instances there was only an outline of the cytoplasm, with no trace of nucleus. These atrophic cell nests were more richly supplied with glia cells than normal. All the arteries and veins were empty or contained very few erythrocytes.

The microscopic diagnosis was general syphilitic meningoencephalitis, periarteritis and endarteritis; edema and anemia of the brain.

Investigation following death disclosed the fact that the patient had complained of severe continuous headaches for the past few years, for which she had consulted several physicians. It was learned, furthermore, that arsphenamin had at one time been administered.

CASE 2.—W. H., a white man, aged 52, entered the Cook County Hospital, complaining of rectal discomfort, and was admitted to the surgical service as a case of hemorrhoids. In the ward where a complete history was obtained, it was further learned that the patient experienced paresthesias involving various portions of the body. The patient stated that he had not had venereal disease. Although married a number of years, his wife had given birth to no children. On physical examination he was found to have, in addition to external hemorrhoids, inequality of the pupils, both of which responded rather sluggishly to light. The preoperative diagnosis of hemorrhoids and tentatively neurosyphilis was made. The blood Wassermann reaction was positive. A spinal puncture was not performed. May 12, 1922, the patient was scheduled for a hemorrhoidectomy. A narcotic was administered before removal to the operating room, and ether inhalations were begun. The administration of the anesthetic had been in progress only ten minutes (the operation having not yet been started) when the patient stopped breathing. The pulse continued, however, and artificial respiration was instituted but without avail. Death was attributed to a "respiratory paralysis."

In this body there was found (E. R. L.) a disseminated syphilitic fibrous leptomeningitis, which furnished the only anatomic basis for death. The other changes of note were a marked syphilitic aortitis and stellate scars of the liver, presumably syphilitic in origin.

To determine the relative importance of each of the factors involved in the production of death, namely, the anesthetic (including the preliminary narcotic), the operation, and the syphilitic changes in the brain would be a difficult matter. In fact, an evaluation would be but a matter of opinion and subject to acrimonious discussion. This much, however, seems reasonable to assume: that the anesthetic and the operative "shock" in themselves were insufficient to explain death and, as a corollary, that the syphilitic brain changes rendered both patients susceptible to sublethal doses of morphin and ether. In terms of factors, it may be stated that the cerebral syphilis was the predisposing, and the anesthetic and the narcotic combined, the exciting one; that without one or the other, death would not have occurred at that time.

Death occurring in syphilitics as a result of anesthesia or narcosis is from all indications a relatively rare occurrence. An attempt to gather statistics on this point, however, has been futile. As a matter of fact, the possible ill effect of anesthesia on subjects with cerebral syphilis is entirely neglected in works on anesthetics and surgery. Even in the neurologic textbooks no mention is made of its occurrence. A search through the periodical literature has failed to yield any information that might aid in a statistical study. Reference to the danger of anesthesia or narcosis in other cerebral conditions such as brain tumor, abscess or hemorrhage has been repeatedly emphasized, but with reference only to intracranial operations. Horsley,[3] in 1906, mentioned the frequency of death in brain tumors in which the dose of chloroform was not necessarily lethal, and concluded that "chloroform must be used with caution in the surgery of the nervous system to avoid giving a dose which might bring about the fatal arrest of the respiratory center." Nonne[4] apparently realized the danger of syphilitic inflammation of the brain, at least in operations on the cranium. This author states, in discussing the surgical removal of cerebral gummas, that "multiplicity of lesions, as, for instance, the association of a basilar specific meningitis with a gummatous tumor, contraindicates operative interference." No reasons are given for this conclusion.

3. Horsley, Victor: On the Technique of Operations on the Central Nervous System, Brit. M. J. 2:411, 1906.
4. Nonne, Max: Syphilis of the Nervous System, translated by Ball, Philadelphia, 1916.

Although an extended search failed to lead to the discovery of case reports similar to the two related in this paper, it is not taken to mean that such observations have not been previously made or recorded. However, it does seem to justify the belief that the knowledge of the possible danger of anesthesia in cases of relatively asymptomatic or slightly active neurosyphilis is not widespread.

An attempt to explain the fundamental changes involved in the production of death in the two cases would entail a lengthy discussion of the various views concerning the action of anesthetics in normal individuals. Whether the proximate change consists of a lipoid solvent action of the anesthetic on the protoplasm of the brain cells [5] or in an alteration of the permeability of the plasma membranes [6] does not intimately concern us here. For our present purposes, it is sufficient to recognize with Lillie that the essential feature of the change produced in narcosis or anesthesia of the normal individual is reversibility; that, regardless of the depth of unconsciousness produced, on removal of the anesthetic the cells regain their normal properties and functions; that, on the other hand, the administration of too high a concentration of an anesthetic agent causes cytolytic or irreversible changes and consequent death. the reversibility, then, according to Lillie, "is an essential characteristic of narcosis or anesthesia, and distinguishes it from the irreversible change of death."

In a brain altered by syphilitic inflammation and in which cytolytic alterations are demonstrable by histologic methods, there are *a priori* changes in the physicochemical properties of many other cells not recognizable by staining. On account of these changes, the affected brain cells are apparently no longer capable of withstanding the effect of what is ordinarily a sublethal dose of an anesthetic or narcotic. The wide range of reversibility found in the normal is perceptibly lessened in pathologic conditions, so that in the administration of an anesthetic the point of irreversibility is reached sooner in the diseased than in the healthy brain. This decrease in the limits of reversible change is recognized in a number of conditions in which anesthesia may be required. Thus, it is well known that lethargic or semicomatose patients require only small quantities of an anesthetic to produce unconsciousness, and that average doses are attended by great risk. In the acidosis of diabetes, the failure to recognize the narrow reversible limits may lead to a fatal outcome. Even a therapeutic dose of morphin may be sufficient in the presence of an acidosis to precipitate death.

It must be remembered that the line of demarcation between the reversible and irreversible stages is not a sharp one; that gradations of all degrees occur, and that a seemingly irreversible reaction may actually be reversible. These transitional forms are represented by those clinical cases in which spontaneous respiration fails and is restored by artificial means. It is in these borderline cases that artificial aid in maintaining respiration is rewarded perhaps only after several hours of continuous effort.

THE PROBLEM OF SLEEP

Since sleep, coma and death, in a measure at least, differ only in the degree of irritability and of unconsciousness, it is difficult to refrain from leaving this subject without mentioning the physiologic problem of sleep. The periodic suspension of consciousness so essential for the restoration of the functional activity of the organism has long been a subject of intense interest. In spite of the great amount of experimental research that has been carried on in an attempt to determine the cause of sleep, the problem still remains unsolved. In fact, the more the question is investigated, the greater and the more intricate are the problems that present themselves; the greater the number of investigators in the field, the more theories are evolved to explain their observations. The increasing number of hypotheses postulated lends testimony to the baffling nature of this question.[7]

Strange as it may seem, except for the utilization of an occasional isolated pathologic fact, little attempt has been made to correlate the processes associated with the production of normal and abnormal sleep. It is of interest in this connection to note that within the past year Kleitman,[8] working on the physiology of sleep, has adopted as the basis for his theory Hughlings Jackson's doctrine of "levels," according to which "the most complex nervous arrangements, centers and levels are stated to be the least organized; the simple, the most organized." In accordance with this principle, Kleitman points out that in prolonged wakefulness in the human subject, the highest centers are first affected and that the lowest centers (such as those concerned with dreaming), because of better organization, may continue to function. He concludes, therefore, that "sleep may be due to fatigue of the highest centers of consciousness, and dreaming to the persistence of the activity of the lower centers."

It is noteworthy that as early as 1885, Mercier,[9] in his discussion of coma from various causes, also used Hughlings Jackson's observation to explain the different stages of coma. He pointed out that in cases of increasing unconsciousness there was a loss of function beginning with the highest and most elaborate centers, spreading downward to involve successively the lowest, simplest and most fundamental centers, and that whatever the remote cause of coma might be, the proximate cause was due to a loss of function of the nervous centers in their order from the highest to the lowest.

It thus appears that all degrees of unconsciousness are connected by intermediate gradations, rendering the whole series continuous; that sleep may pass into deep coma and coma in turn to death, depending on the reversibility of the process involved; and that the discovery of the underlying cause of normal sleep may help also to explain abnormal sleep and some forms of death. The idea suggests itself at this point that a similar physicochemical process may possibly be the fundamental basis of sleep, of coma and of deaths from and by coma.

CONCLUSIONS

1. General anesthesia with syphilis of the brain may prove fatal.

2. With symptoms or signs suggestive of alterations of any sort in the central nervous system, a thorough examination to determine a syphilitic infection should precede any elective operation.

3. In the presence of brain disease, the characteristic feature of the action of an anesthetic, i. e., reversibility (Lillie), is apparently limited in its range. The

5. Meyer, Hans: Arch. f. exper. Path. u. Pharmakol. **42**: 109-118, 1899. Overton, Ernst: Studien über die Narkose zugleich ein Beitrag zur allgemeinen Pharmakologie, Jena, 1901.

6. Lillie, R. S.: The Physicochemical Theory of Anesthesia, American Year Book of Anesthesia and Analgesia, 1915-1916, pp. 1-30.

7. For a comprehensive summary and critical survey of the theories of sleep proposed previous to 1912, the reader is referred to Pieron, H.: Le problème physiologique du sommeil, Paris, 1913.

8. Kleitman, N.: Studies on the Physiology of Sleep, Am. J. Physiol. **60**: 67-92 (Sept.) 1923.

9. Mercier, C.: Another Note on Coma, M. Times & Gaz. **1**: 411-413, 1885.

fundamental mechanism by which the reversible reaction is rendered irreversible is problematic.

4. A more thorough understanding of how and why normal sleep occurs will probably be necessary before a satisfactory explanation is reached regarding deaths such as are reported here.

SKIN REACTIONS WITH GONOCOCCUS FILTRATES (TOXIN?)*

RUSSELL D. HERROLD, M.D.
CHICAGO

It has been generally held that the toxicity of the gonococcus is due to the so-called endotoxins that are set free only after the death of the organism. De Christmas [1] reported that he was able to obtain a true exotoxin in cultures by growing the gonococcus in serum broth medium. The filtrate obtained by passing the culture through talc was toxic to guinea-pigs, mice and rabbits, and when diluted 1:10 and held in the anterior human urethra, a definite temporary urethritis and discharge occurred. He stated also that this toxin was destroyed by heating at from 75 to 80 C. He believed it to be an exotoxin, because it could be detected in the broth cultures within twenty-four hours. Other workers report that they have obtained, from autolysed extracts of the gonococcus, a toxic substance that answers all the requirements of De Christmas' toxin; and they have attributed the results of De Christmas to the liberation of endotoxin by the rapid autolysis of the gonococcus. Whatever the classification or source of the toxic products, the facts remain that gonococcus vaccines are decidedly more toxic than many other bacterial vaccines in the same dosage; and there are often manifestations during the disease which it seems reasonable to attribute to toxin rather than to the organism alone. These are notably the skin lesions, systemic conjunctivitis, iritis, keratitis, myositis, tenosynovitis, and certain types of arthritis, in all of which it may be impossible to demonstrate gonococci.

I have obtained a substance in the filtrates of broth cultures of gonococci that has given a skin reaction up to a dilution of 1:100 when injected intracutaneously in the quantity of 0.1 c.c. in persons who have never had gonococcus infections, after the method of the Schick and Dick tests. Torrey and Buckell's [2] gonococcus strain 34, which was found by them to be one of the more widely spread strains, was inoculated in dibasic sodium phosphate broth containing 0.1 per cent. dextrose. The growth after five days was passed through Berkefeld N filters, and the filtrate diluted with salt solution to 1:100 for the skin tests. The filtrate became partially inert after heating one hour at 90 C., but it was necessary to heat for two hours at 100 C. to destroy the reacting substance for satisfactory controls. The results of the tests on fifty patients are tabulated. It is seen that uniform reactions appeared in the group that had never had gonococcus infection. The reaction consisted of redness at the site of injection, varying in size from 0.7 to 4 or 5 cm. in the more marked reactions, the average being about 2.5 cm. in diameter. There was usually some induration. This reaction could usually be seen within twelve hours, and reached its maximum in twenty-four hours. If the area of redness exceeded 2 cm. it was arbitrarily classified as two plus, and reactions of a less degree were termed one plus. The majority of patients with active infections of longer than three weeks gave no reaction, but frequently those with infection of less than three weeks gave reactions. When the infection was no longer present, a reaction was again more often obtained, especially if longer than one year since the active infection.

The serum of a patient who gave a negative reaction neutralized in a quantity of 1 c.c., 100 skin test units; that is to say, 0.1 c.c. of the toxin filtrate. This was determined by the incubation of the mixture of serum and toxic filtrate for one hour at 37 C., and then injecting 0.1 c.c. intracutaneously in a person who previously had given a positive test. The skin reaction was negative with this mixture, and positive with the control of untreated toxin.

Results of Skin Tests with Gonococcus Filtrate Diluted 1:100 with Physiologic Sodium Chlorid Solution

	Total Number	Number with 2+ Skin Reaction	Number with 1+ Skin Reaction	Number with No Skin Reaction
No history of gonococcus infection	22	19	2	0
History of previous infection	8	4	2	2
Infection present	20	5	3	12

It would seem from the results so far that this test may be of diagnostic value, and possibly also an aid in the control and development of methods of treatment. It is advisable to try to obtain filtrates that will give reactions in higher dilutions than 1:100.

THE TREATMENT OF CERTAIN RESPIRATORY DISEASES BY CHLORIN

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AND
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Since the publication of an earlier paper [1] on this subject, considerable additional work has been done, and many inquiries have been received, and it is believed that the observations presented here should be reported.

In the original paper, it was stated that cultures taken after exposure to chlorin remained sterile or developed only a few scattered colonies, and it was believed that "hour exposures appeared sufficient practically to sterilize the tonsillar, postnasal and pharyngeal surfaces."

Undoubtedly this conclusion was at least partially erroneous, and later investigations have shown that sterility of the mucous surfaces following the therapeutic administration of chlorin cannot be expected. The error was probably due to two conditions of the experiment. In the first place, normal volunteers were used for this work; and, as relatively few bacteria were obtained in the first culture, sterility in the second culture was obtained with relative ease. Again, a higher

* From the John McCormick Institute for Infectious Diseases.

1. De Christmas: Gonococcus and Its Toxin, Ann. de l'Inst. Pasteur 9:609, 1897; 14:331, 1900.

2. Torrey, J. C., and Buckell, G. T.: A Serological Study of the Gonococcus Group, J. Immunol. 7:305-359 (July) 1922.

1. Vedder, E. B., and Sawyer, H. P.: Chlorin as a Therapeutic Agent in Certain Respiratory Diseases, J. A. M. A. 82:764 (March 8) 1924.

concentration of chlorin (0.02 mg. per liter) was used than was subsequently applied for therapeutic purposes (0.015 mg. per liter).

Whatever may be the explanation of the efficacy of this treatment, it may be stated here that this gassing chamber has remained in continuous use, and that the clinical results have continued to be approximately the same as those at first reported. The cases treated during the month of June, 1924, are summarized in Table 1.

TABLE 1.—*Results of Treatment*

	Cases	Cured	Improved	No Change
Coryza	85	60	22	3
Acute bronchitis	9	6	3	0
Acute laryngitis	6	2	4	0
Chronic bronchitis	12	2*	10†	0
Whooping cough	21	4	10	7

* Four months' duration.
† Four months, ten years.

METHOD BY WHICH INHALATION OF CHLORIN ACHIEVES THESE RESULTS

1. Although sterilization of the mucous surfaces is not achieved, there can be no doubt that many bacteria are killed. Table 2 gives the result of swabs taken before and after treatment from ten cases chosen at random from among coryza patients treated during the month of June, all from whom cultures were taken.

TABLE 2.—*Bacterial Count Before and After Treatment*

Case	Colony Count Before Treatment	Colony Count After Treatment
1	Uncountable	7
2	30	7
3	Uncountable	8
4	10	11
5	202	7
6	193	78
7	642	340
8	125	38
9	214	41
10	2,500	500

We do not know with certainty the organisms that are responsible for the production of colds or influenza, and the Bordet-Gengou bacillus is known to be exceedingly sensitive to unfavorable agencies. It is at least possible that these pathogenic organisms may be killed, even though not all the common bacteria that grow on our agar plates are killed. It also seems highly probable that such organisms as remain on the mucous surfaces are much reduced in vitality and virulence, even though they may still grow on an agar plate. With many organisms killed and the remainder reduced in virulence, the ordinary defense mechanism of the body may be now able to deal with the remaining infecting organisms.

It has been suggested that no germicidal action of chlorin could be expected in the presence of the organic matter of the mucus and exudate lining the respiratory tract. This argument loses sight of the fact that it is the great virtue of the chlorinating antiseptics to act under precisely these circumstances. This has been shown by Dakin and Dunham,[2] and it is well known that surgical solution of chlorinated soda may cause complete sterilization of a wound, in spite of the very high organic content of wound secretions.

Estimating the tidal air at 500 c.c. per respiration, and the number of respirations per minute at eighteen, 540,000 c.c. of air is inhaled and exhaled during one hour. Since a concentration of 0.015 mg. per liter is approximately equal to 5 parts per million by volume, and since practically no chlorin inhaled is exhaled, about 2.5 c.c. of pure gaseous chlorin is absorbed in the respiratory tract during a one hour treatment. The thin film of fluid bathing the respiratory tract, if gathered together, could hardly be in excess of 50 c.c., and hence during the course of the hour this film of fluid receives gaseous chlorin which may be estimated at 5 per cent. To be sure, this amount of chlorin is not all present at any one time; but it requires more imagination to suppose that this amount of chlorin has no antiseptic action than to suppose it has.

2. The irritant action of chlorin stimulates the flow of lymph and cleanses the mucous surfaces. One of the first actions of the chlorin treatment is to increase noticeably nasal and bronchial secretion, causing productive coughing and blowing of the nose. When horses were treated with chlorin, it was noticed that there was an almost continuous nasal drip, and when they blew their noses or sneezed they scattered discharge all over the clothes of any one standing in front. This cleansing action must necessarily be beneficial, and must aid in disposing of quantities of organisms and may even bring up organisms from the depth of glands and crypts. The fact that sterile plates are seldom secured after treatment may well be due to this continuous discharge of bacteria which have not remained long enough in chlorinated fluid to be killed. Part of the beneficial action in cases of whooping cough is undoubtedly to be attributed to the loosening of the masses of tenacious mucus which are then coughed up more readily, and to this cleansing of the mucous surfaces.

3. The action of any irritant, including chlorin, on the capillaries is to cause a primary brief constriction followed by a much longer dilatation. Thus, a hyperemia of the affected mucous membranes is produced, which, as Bier showed many years ago, is conducive to recovery. Not only is such an increased blood supply unfavorable per se to the infecting organisms, but such dilatation of the capillaries is invariably followed by an increase in the number of polymorphonuclear leukocytes supplied to the parts that cling to the vessel walls and escape by diapedesis. Thus, an increased number of phagocytes are brought to the infected mucous membranes.

4. There is stimulation of phagocytosis and the production of antibodies. In addition to disinfectant action by chlorination, "chlorin is a powerful oxidizing agent, and possesses in high degree the property of decomposing toxins. By the regulated action of hypochlorous acid, Dean has prepared a nontoxic dysentery vaccine, and it is a common observation that the free use of hypochlorites may reduce the constitutional symptoms arising from septic processes."[2]

Indeed, this oxidation is believed by many chemists to be the main disinfectant action of chlorin. Hypochlorous acid is formed by union with water. This, in turn, is reduced to hydrochloric acid, with liberation of nascent oxygen.

There are a number of experiments which indicate that physiologically active oxygen stimulates immunologic processes. Thus, Loevenhart,[3] in the 1914 Harvey Lecture, said:

To return to the original subject of the effect of physiologically active oxygen on inflammation and on immunity

2. Dakin and Dunham: Handbook of Antiseptics, New York, the Macmillan Company, 1917.

3. Loevenhart, A. S.: Certain Aspects of Biological Oxidation, Arch. Int. Med. 15:1059 (June) 1915.

processes, I should like to refer briefly to two pieces of work. Prof. Ludvig Hektoen has investigated the effect of iodosobenzoate and iodoxybenzoate on certain immunity reactions. He injected these substances intravenously in dogs and found that they increase the production of specific hemolysin following a single injection of 10 per cent. suspension of goat blood. The results were striking. The increase in hemolysin in the animals receiving the treatment was from twelve to sixty times as great as in the control animals. Iodbenzoate without active oxygen is without effect. Whether physiologically active oxygen will similarly stimulate the production of other immune bodies remains to be determined by further experiment. It is sufficiently obvious that if we could similarly increase the production of diphtheria antitoxin, it would be of great value.

Dr. Samuel Amberg and his co-workers, in a series of investigations, have shown that iodosobenzoate and iodoxybenzoate injected intravenously or intraperitoneally have the power of markedly inhibiting the local inflammatory reaction as produced by mustard oil or bacterial toxins injected intracutaneously or instilled into the conjunctival sac, whereas iodbenzoate, possessing no physiologically active oxygen, is entirely without effect. The results are very striking indeed.

Arkin [4] has also found that these oxidizing substances stimulate phagocytosis. Adding the power of destroying both exotoxins and endotoxins to the property of stimulating phagocytosis and antibodies, it is evident that chlorin may be a powerful therapeutic agent irrespective of bactericidal action.

It is impossible to state the relative importance of these different factors in alleviating and curing respiratory infections. I still believe that the sterilizing effect of the chlorin is quite important; but it is possible to discount this factor completely and yet have a rational explanation for the clinical improvement, which is undoubted.

The concentration of chlorin that will give the best results should be considered. All our treatments have been carried out at concentrations varying from 0.013 to 0.015 mg. per liter. Experience has shown that anything higher than 0.015 mg. per liter is apt to be irritating and may produce some cough even in normal persons. It has also been found that when the operator remains in the gassing chamber for two or three hours even at the optimum concentration for a treatment of one hour, he usually develops some slight cough which may last for a day or two. It is quite evident, therefore, that the best therapeutic results cannot be obtained with concentrations higher than 0.015 mg. per liter. On the other hand, it has been found that a concentration of 0.009 mg. per liter is of practically no therapeutic value, even when the treatment is prolonged for two hours. This means that in order to obtain satisfactory results, the concentration of chlorin must be maintained for the entire hour within very narrow limits, and that if the concentration is not so maintained, failures will result that can only discredit the treatment.

APPARATUS

If this treatment is to be made available to the medical profession, apparatus must be designed that will enable physicians to maintain this concentration exactly and automatically. A small portable apparatus has been described [1] by means of which gaseous chlorin might be released from small cylinders, through a measuring device. The amount of chlorin necessary to set up the desired concentration in any given number of cubic feet is readily calculated. When this apparatus was described, it had already been used in about 100 cases with good results, and it was thought that it would prove satisfactory. Subsequent experience, however, has shown that this type of apparatus is unsatisfactory. The problem is not to set up a concentration that may be correct initially, *but to maintain such a concentration for one hour.* The rate of absorption of chlorin varies enormously with the character of the walls of the room, the number of persons, in it, the amount of moisture in the air, and many other factors. A room constructed of beaver board absorbs chlorin so rapidly that there are probably no therapeutic amounts of chlorin in such a room five minutes after the proper amount of gas has been released. This means that, in order to maintain a concentration with this type of apparatus, the physician must remain in the room to release constantly such quantities as may be necessary; and he must gage such quantities by his nose, which will usually be untrained, and which in any case is quite unreliable, as the sense of smell becomes dulled after at most ten or fifteen minutes. Even if all this were not so, the physician would not be able to give three or four hours daily to administering such treatments, and if he did he would suffer from excessive dosage of chlorin himself.

For these reasons, it was deemed imperative to develop an entirely different type of apparatus. After consultation, manufacturers who have cooperated in the work have developed a type of apparatus that will deliver the proper concentration of chlorin, constantly and automatically. Briefly, this apparatus consists of a small box. A small electric motor in the box, operated from the house current, drives a blower delivering air at the outlet of the equipment at a rate of from 10 to 12 cubic feet a minute, the air flow being metered. The chlorin is generated by the electrolysis of hydrochloric acid, the current being supplied by two dry cells. The rate of chlorin generation is controlled by regulating the flow of current through the electrolyte. This is done by means of a rheostat, and the current is indicated on a meter. By turning the rheostat until the needle of the meter is on the proper point, the desired concentration is obtained, and will thereafter be delivered constantly with no change. The patient breathes the gas air mixture by adjusting a funnel shaped bag of muslin or paper to his nose and mouth. This fits very loosely, so that the air streams past his face, and rebreathing into the bag is avoided. The practicing physician can use this apparatus in his office, or can carry it to bed patients.

A different type of apparatus is being made for use in hospitals, institutions, large establishments, and for treatment of animals, where a room will be desired in which to treat a number of patients at one time. Chlorin may be supplied either by a similar electrolytic cell or from a cylinder. The amount of chlorin in the air of the room will be determined continuously by a newly devised mechanical chlorin detector and analyzer, which is connected electrically with the chlorin-indicating apparatus outside the room. More chlorin is introduced manually when the concentration in the room drops below the desired limit, and is shut off when the concentration reaches the upper limit. With such apparatus, satisfactory therapeutic results can be obtained. They cannot be obtained with any type of apparatus that does not maintain the proper concentration continuously and accurately.

CONTRAINDICATIONS

Hay-fever, asthma, pneumonia and tuberculosis cannot be benefited by this treatment, and such patients should be excluded.

4. Arkin, Aaron: The Influence of Certain Oxidizing Agents on Phagocytosis, J. Infect. Dis. 11:427, 1912.

Hay-Fever.—Even though some slight improvement resulted from the treatment, as soon as the patient goes out a fresh dose of pollen is received, and the condition is as bad as ever. This can only result in discrediting the treatment by offering a false hope of relief.

Asthma.—Probably most cases of asthma are caused by sensitization with some variety of foreign protein, and the only hope of relief is the identification and exclusion of the irritating protein. A few cases of asthma are caused by absorption of bacterial protein, following a chronic bronchitis. There is some hope that the chlorin treatment may afford relief in such cases, but at present there is little evidence to this effect. Such cases will have to be selected very carefully for trial. A number of patients suffering from asthma have insisted on giving the treatment a trial. Such cases have been carefully watched, and in nearly every case the chlorin has aggravated the condition and has brought on an asthmatic paroxysm, and the patients have not been able to remain in the gassing chamber for the full hour.

Pneumonia.—Chlorin has no penetrating power and cannot be expected to have any effect on portions of the lung where consolidation has occurred.

Tuberculosis.—The treatment has not been used in cases of tuberculosis and cannot be expected to have any specific effect on tubercle bacilli. On the other hand, many patients with chronic pulmonary tuberculosis suffer from chronic bronchitis due to mixed infection, almost as much as from the tuberculosis. It is possible that such patients might obtain some relief from chlorin treatment. However, it should be tried in such cases only after further study of the method, and only then in hospitals where it may be accurately controlled.

HYPERSUSCEPTIBILITY

A few patients appear to be hypersusceptible to the effects of chlorin, which is to be expected. When in any case it is evident that the effect of the treatment is far more irritating than it should be, the patient should not remain for the full hour. It is believed that of the small number of patients who receive no benefit from this treatment, a part are hypersusceptible, and the remainder suffer from sinus infection and the affected parts are inaccessible to the gas.

Age presents no contraindication. We have treated one infant of 3 months, suffering from whooping cough, on four separate days. This infant was greatly improved and made a good recovery within two weeks. We have also had several patients suffering from chronic bronchitis ranging from 75 to 85 years of age. None of these persons were injured by the treatment, and on the contrary reported that they felt better, that the cough was much less annoying, and that they enjoyed the best night's sleep that they had had in years. Such improvement is worth securing, even though little hope can be afforded of the permanent cure of long standing chronic bronchitis.

PROPHYLACTIC USE

The prophylactic use of chlorin is in the future, after the therapeutic value of the treatment is established and methods and apparatus for applying it are on a firm basis. However, there is every reason for believing that chlorin may be used in schools, theaters and other places where people congregate, for the purpose of preventing respiratory infections. In any institution that has a ventilating system, chlorin can be introduced in such quantities as to set up the proper concentration in the rooms supplied. This could be so used in schools for an hour, several times a week.

But even before this can be done, the respiratory infections may be largely controlled through treatment of the early cases. If, when colds, influenza, whooping cough or similar infections of the respiratory tract first appear, the first cases are promptly treated, the infection will fail to spread and will not become epidemic. Prompt treatment will thus greatly reduce the number of cases among troops, schools, colleges, and industrial establishments employing large numbers of men and women.

Mention should also be made of the possibility that chlorin may be used successfully in the treatment of certain respiratory diseases of animals. It has thus been used once successfully at Edgewood Arsenal controlling an epidemic of influenza in the horses at Fort Hoyle, Md. The horses so treated made a complete recovery in much shorter time than could have been expected, and the epidemic ceased to spread. At the time treatment commenced, there were forty-one cases scattered throughout fourteen different stables. Only three new cases developed after the first treatment, and at the end of five days all the affected animals were well on the road to recovery.[5]

It is hoped that this treatment will also prove valuable in treating distemper in dogs. The few that we have treated appeared to be greatly improved. Much more work will be required to determine the effectiveness of chlorin treatment on the respiratory infections of animals.

Clinical Notes, Suggestions, and New Instruments

AGRANULOCYTIC ANGINA

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In a recent article[1] agranulocytic angina is described, and a case occurring in Chicago is reported. As far as is known, this case of Dr. Lovett's is the first case described in America. The case here reported fits so perfectly the picture of Dr. Lovett's case that it seems proper to record it.

REPORT OF CASE

History.—Mrs. C., a widow, aged 33, who entered the West Suburban Hospital, Oct. 18, 1924, had always been well. The family history was negative. She had two healthy children. The onset of present complaint was about one week before entrance. It began with sore throat and sore gums, chills and fever and general malaise. There was considerable headache, no cough or dyspnea, no nausea, no vomiting, and no bowel or urinary disturbance.

The day after entrance, large gray patches were found on the palate, gums, and margins of many of the teeth. These areas were grayish white, firmly adherent to the underlying tissues, and were extremely tender. Similar patches developed about the cervix, vulva and anus.

The lungs were free from any congestion. The heart was not enlarged and did not show any murmurs.

The abdomen was not tender or distended. The spleen and liver were at no time palpable. The reflexes were normal. No petechiae were found.

The temperature was uniformly high, varying from 103 to more than 105. The pulse was correspondingly elevated to

5. Veterinary Bulletin, Office of the Surgeon General, U. S. Army 23: 153, 1924.

1. Lovett, Beatrice R.: Agranulocytic Angina, J. A. M. A. 83: 1498 (Nov. 8) 1924.

from 100 to 120. The blood culture was negative. Repeated urinalyses showed a large amount of albumin and many red cells, white cells, and many casts. Blood counts showed a marked reduction of white cells, one being 2,300, another, 770, and a third, 1,400. The red cells were over 3,000,000, and the hemoglobin was between 70 and 85 per cent. The differential count showed almost an absence of the granular elements. One count showed 16 per cent. polymorphonuclears; another, no polymorphonuclears. Smears from the mouth showed Vincent's spirillum and fusiform bacilli, streptococci and staphylococci. Cultures were negative for diphtheria.

The course of the disease was very rapid. Watery stools developed several days before death, and these were usually involuntary. The toxic symptoms increased steadily, and death was preceded by a muttering delirium.

The treatment included the use of alkalis and sedatives. Neo-arsphenamin was given intravenously, and locally to the lesions in the mouth. Solution of potassium arsenite (Fowler's solution) was also used locally. Mercurochrome-220 soluble was given intravenously.

Necropsy Findings.—Unfortunately, permission was obtained only for examination of the abdomen. The liver was enlarged and fatty. The spleen was enlarged and soft. The right kidney had almost double the usual volume; the parenchyma was much injected, with foci of fatty changes. The left kidney was small and also injected. The right ovary contained multiple scars; the left was big on account of a big cyst of a graafian follicle. There were no changes grossly in the bladder, suprarenal glands or tubes. The vagina was injected; the cervix was covered with pus and ulcerated.

In the stomach, multiple small ulcers were present. In the duodenum, jejunum and ileum, no ulcers were found. In the whole colon, some single ulcers were found.

COMPARISON WITH OTHER CASES

Several cases of agranulocytic angina have been reported in Germany. All have been in women in middle life, all have shown the multiple gangrenous ulcerations in the mouth, and all have been fatal. The characteristic finding is the blood picture of a total or almost total absence of the polymorphonuclears.

There are two differences between Dr. Lovett's case and the one here reported. Icterus was present in hers, and Vincent's spirillum was absent. In our case icterus was not observed, and the Vincent's spirillum was found. The frequent finding of Vincent's spirillum in the mouth in the absence of symptoms would suggest its presence here as possibly being of no great significance. In addition to these clinical differences, necropsy showed ulcers in the stomach and colon, which findings were not reached in Dr. Lovett's case.

As to the cause of this disease, there are two possibilities. 1. It may be a specific infection resulting in gangrenous areas and with a specific toxin against the granulocytes. 2. It may be a primary affection of the bone marrow resulting in a drop in the formation of the granulocytes, with a lowering of the resistance of the patient. This might make the patient subject to any intercurrent infection, and necrosis and death results.

127 North Oak Park Avenue.

Eyesight of School Children.—Snellen's eye tests were made of 9,245 children from 6 to 16 years of age in South Carolina, Maryland, Delaware and New York State. Of the children of all ages, 63 per cent. were found to be normal in both eyes, 27 per cent. moderately defective and 10 per cent. had rather poor vision in one or both eyes. The percentage of boys with normal vision in both eyes was slightly greater than the percentage of girls. Conversely, the percentage of girls with moderately defective vision was higher than that of boys, but the percentage with poor vision was about the same for the two sexes. The percentage of children with normal vision in both eyes increased with age. The percentage of children with moderately defective vision decreased with age, but the percentage with markedly defective vision increased markedly with age.—Collins, S. D.: *Pub. Health Rep.* **39**:3013 (Nov. 28) 1924.

Special Article

MEDICAL EDUCATION AND MEDICAL SERVICE

II. THE WAY WE ARE MEETING THE SITUATION

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CHICAGO

(Continued from page 285)

But why elaborate on the shortage of physicians in the rural districts, when it is admitted? Because we are reluctant to admit it and only do so under pressure. I have no thought that there is any dishonest evasion of this issue or of any other topic of this subject. But the fact remains that we are human; that it is natural to try to escape unpleasant facts and to avoid them when they interfere with our plans and aspirations. And our human nature is shown in the way we are meeting this issue. Occasionally, when the logic of the situation brings us to it, we admit the shortage in the country directly, as in the statement of Secretary Colwell:[12] "It is true that such a scarcity exists; and that it is becoming more pronounced is evident."[13] But usually it is admitted only as an incident, rarely as a major fact—never as one to influence our policy of medical education. Such phrases as "the present so-called shortage,"[14] "the alleged shortage of physicians in rural communities,"[15] and the "apparent local shortage,"[16] illustrate the way in which we approach the problem. Our favorite way of meeting the situation is to proclaim that there is no shortage of physicians; that, for example, is the burden of editorial comment in THE JOURNAL of July 24, 1920; March 19, 1921; July 2, 1921, and Feb. 11, 1922. Indeed, the strongest evidence of our concern about the difficulty is the indirect evidence shown in our repeated protestations that it does not exist, or in our equally frequent efforts to minimize it. The answer that there is no shortage of physicians when the question is the shortage of *rural* physicians is an answer whose effects result from confusing things. It is beside the point; the point is the shortage in the country—which is not relieved by plenty in the city. To say, also in the argument, that it is "largely a question of distribution" is simply to minimize the situation with a general term; it does not help it and it may not offer any solution of it. Indeed, to try to explain it away as largely a matter of distribution—as though that were a simple thing, easily remedied—is either an effort to minimize a serious fact or a failure to appraise it at its full importance. Famines and deserts are largely matters of distribution.

At another time we would minimize the importance of the present shortage as nothing unusual by saying: "There has always been a scarcity of physicians in rural districts, although the shortage in *numbers* has become more pronounced in recent years. This does not mean, however, that the people in rural communi-

12. See comment, top of page 368.
13. Colwell, N. P.: Present Needs of Medical Education, J. A. M. A. **39**: 838 (March 15) 1924.
14. Proceedings of the San Francisco Session, J. A. M. A. **81**: 36 (July 7) 1923.
15. Shortage of Physicians in Rural Communities, Current Comment, J. A. M. A. **78**: 796 (March 19) 1921.
16. The Supply of Physicians, editorial, J. A. M. A. **83**: 1004 (Sept. 27) 1924.

ties are not as well supplied with medical *service* as formerly." [17]

Shortage is a relative term and, in the sense that there have always been relatively fewer physicians in the country than in the cities, the statement is doubtless true; but the inference from that statement is that the present shortage is no worse than it has always been. And that inference is impossible to reconcile with such facts as I have brought out above. The evidence all over the country refutes it. To take but one item of the evidence—the advancing age of country doctors now. Country doctors were not always, in average age, old men; they are so now, because young men are not coming in to fill their places as they disappear. So far as they are failing to do this, the shortage is worse and is a new phenomenon. Physicians are disappearing from innumerable locations where there was formerly no lack of them. As Secretary Colwell says, in another connection, "that this scarcity is becoming more pronounced is evident."

In extenuation of the situation, it is offered that the rural shortage is compensated by the improvement in quality of rural practitioners, or, as put in the quotation above, "this does not mean that the people in the rural communities are not as well supplied with medical *service* as formerly." I have no disposition to deny that, as respects formal training, there is an improvement in quality of our graduates now. My criticism is that the quality is of a sort that will not accept rural conditions. But I challenge emphatically the statement that the present shortage does not mean "that rural communities are not as well supplied with medical *service* as formerly." The expedients as substitutes for physicians in the country, which are being offered by the Council on Education, to be referred to later in this article, and by others, themselves prove the fallacy of such a statement. Such facts as I have produced above show the failure in such a statement to realize the actual rural situation.

I feel also that a strong point cannot be made for the argument on this situation in the inferior quality of country doctors in the past as respects their service in general to the community.

As Gile says:

> . . . after long years of constant work with these men (country doctors, often from inferior schools—W. A. P.), I wish to give my testimony to the general high standard of ability. . . . no more valuable . . . servants of the public can be found. . . .

As a matter of fact, these rural practitioners who are disappearing have given, in service and otherwise, a good account of themselves. It is they, with the family physicians in the cities that are likewise tending to become rare, who are chiefly responsible for the respect and influence which we have always enjoyed. And they have given a good account of themselves not only as social servants but also in the advancement of medicine. There are to be found among them such men as Mann and Danielson of Medfield, Mass.; Arnell of Orange County, N. Y.; McCoy of Clark County, Ill.—men who in the first years of the nineteenth century by scientific work wrote their names in the history of epidemic cerebrospinal meningitis; as Brashear of Bardstown, Ky., who did the first hip-joint operation; as McDowell, Beaumont, Marion Sims and Long.

Another way we have of minimizing the importance of the shortage is to emphasize "the greatly diminished prevalence of disease in rural communities" (Colwell), so that there is not need for so many doctors. The rural districts are healthier now, but they are healthier, as the cities are healthier, because infectious diseases have been lessened. And they will not remain so, unless physicians are there to care for those who become ill and to look after child welfare. Expert advice is needed on the ground. As Adams points out, "For the first time in the history of American vital statistics the country, with every advantage over the city for the rearing of babies except reliability of medical attendance, showed in 1921 a higher death rate for babies under 1 year." And Vaughan points to the development of the same situation for the general death rate. There has not been any great lessening in the rural community of childbirths, of accidents and of diseases other than infectious.

A similar argument is that there is not need for so many country doctors because automobiles, good roads and telephones enable them to extend the range of their activities and to take care of more people. This is true, and it is the one fact that helps the situation. There is not need for as many country doctors as formerly, but there is very great need for an adequate number, which is not being provided; as a matter of fact, the need has not been greatly reduced.

Another argument, which we present when attention is called to the *rural* shortage, is our emphasis on the per capita number of physicians in the United States. This embodies the same confusion as the no shortage in general argument. The fact that there is one physician to every 724 people in the United States does not cover the question. It is still the matter of distribution that we are not able to control. It is conceivable that we might have an abundance of physicians per capita in the United States and yet not have one in a town of less than 10,000 people.

The same sort of reasoning as that of the per capita argument is used in offering, as a probable ultimate solution of the rural difficulties, the facts, frequently cited, that a sufficient number of physicians are graduating to keep up the present per capita, and that our medical schools are turning away students. The assumption of this argument apparently is that, if we continue to supply enough physicians to meet the needs of the country as a whole, distribution will in time take care of itself; that when there get to be too many doctors in the cities they will be crowded into the country. "The problem will be solved if the physicians in towns and cities who are barely making a living can be induced to locate in rural districts. The number of physicians in the United States is adequate; the problem is one of distribution." [18] This seems to be an impractical hope. It is the sort of optimism of the Texan of forty years ago who thought he could get settlers for the unoccupied farm lands there by the simple expedient of offering free farms to the crowded, poor, but city-bred Jews of the Ghetto. Men stay where their tastes and habits hold them. They make their try where they have planned to stay, and if they fail they hang on as best they can or they duck into some other vocation in their accustomed surroundings, much oftener than they try again, in strange surroundings, a vocation in which they have already failed.

17. Report, Council on Medical Education and Hospitals, 1924, p. 81. (Italics in original.)

18. No Shortage of Physicians in the United States, Current Comment, J. A. M. A. 77:146 (July 2) 1921.

These facts are illustrated in the crowding of the cities of Europe, and even in the United States, by physicians who would have led more prosperous and worthwhile lives in small places where they are needed.

The same reasoning applies to the argument based on the filled state of the medical schools. There is no relief for the rural shortage in the fact that our medical schools are filled to capacity with students who intended to be city physicians. If some of these schools had their courses so planned that they would be available for men who were ready to practice in the country, it would be another matter. Each year reports on medical education point apparently with satisfaction to the reduction in the number of schools, and there is constant emphasis being placed on the number of students who are turned away from medical schools. The disappearance of a medical school, however, is not in itself evidence of an improvement, nor is the fact that medical schools, in their zeal for proper educational facilities, are turning away medical students. As President Pritchett[19] has said:

> This reduction of teaching agencies (medical schools —W. A. P.) has not been an unmixed blessing, and the results viewed from the needs of the country and of the profession suggest some considerations that should have weight for the future. . . .
>
> In the first place, it is clearly not possible to solve the problem of medical education in the United States by building up a small number of richly endowed and highly equipped medical schools.

President Eliot is quoted as having voiced his skepticism about the desirability of cutting down the classes of the Harvard Medical School to 125 from 200, for which its buildings were planned. I am not advocating an unrestricted flow of doctors, but I am calling attention to the fact that an abundant supply of doctors, provided they are good doctors, is not a social evil, and that the assumptions we make on this basis are not all unquestionably sound.

To summarize: The no shortage argument, the per capita argument, the distribution argument, the healthier conditions of the country argument, the full schools argument, not only tend to minimize the situation, but to suggest that in time through these factors the rural medical problem will solve itself. I think a careful consideration of the facts involved compels us to conclude that these factors will produce no such fortunate result; and yet these arguments constitute our first line of defense in the situation.

THE EXPLANATIONS WE ARE OFFERING FOR THE SITUATION

Our second line of defense is that it is not our fault anyway; it is the country's. Our constant contention is that the rural shortage of physicians is due to social and economic conditions there and not to the increased requirements of medical education. For example:

> It is quite clear that the only way by which physicians can be induced to locate in rural districts is to make these districts more attractive places in which to live, from the professional, social and economic points of view.[20]

We try, in other words, to shift the burden of responsibility from our shoulders to those of the rural districts. I have called attention to the fallacy of this attempt. Social and economic conditions are dependent on facts of the largest proportions. They must be accepted in any generation as they are, and met directly. Bettering them is a matter of hard and long endeavor, not simply of desire or suggestion. And when we talk in a casual easy way, as we do, of the necessity for adapting social and economic conditions to our needs or tastes, we are talking without appreciation or, at least, responsible consideration of the difficult character of the changes we propose. What would be thought of the attitude of the individual physician who told the man whose child was acutely ill or whose wife was in labor that if the man wanted this doctor's service, he would have first to make the road to his house, his surroundings and the social and economic conditions of his household to the doctor's liking. The doctor would be considered useless for this situation. And yet this is what we are in effect saying to the country as a whole when we tell it that it cannot have our services because of its economic and social conditions. If we cannot furnish medical men to meet them as they are, we must confess our uselessness in the situation. When the country people come to realize that this is our position, I believe they will make short work of our contentions. They will take measures to see that requirements are put on a plane that will turn out graduates who are not above the attractions that the country can offer. Indeed, evidence of such an inclination is not lacking now in comments of the public press and in gestures of state legislatures.

Let us examine some of the contentions that are made in explanation of the rural shortage. Secretary Colwell[21] has elaborated these in his paper, "Is the Decline of the Country Doctor to Continue? If not, why not? If so, who or what will take his place?"

> In former years the country doctor was . . . a leading citizen; he had access to every home; he treated everybody; he made a good living; he had all the essential home comforts; his children had as good educational opportunities as others; . . . His opportunities were better, if anything, than those of physicians in cities and towns . . . Now these conditions for the country and city doctors have been reversed.
>
> . . . . forces have tended to reduce also the *social* standing of the country doctor. . . .
>
> There are still other reasons for the *decline* of the country doctor. . . . country teachers until recently have deteriorated . . .
>
> To insure doctors permanently for rural communities, *a restoration of reasonable living conditions* in these districts is essential.

These quotations and subsequent ones are taken from Secretary Colwell's article, first, for the reason that it is a convenient summary of statements on these subjects which are made repeatedly in the editorial columns of THE JOURNAL or the literature of the Council on Medical Education and Hospitals; for example, the same points are set forth, often in practically the same words, in an editorial in THE JOURNAL.[22] Secondly, they have more than the personal weight of the author, because of the fact that, through the literature of the Council on Medical Education and Hospitals and the editorials of THE JOURNAL on medical education, he has been the chief spokesman on the

19. Pritchett: Report of the Carnegie Foundation, 1921, p. 34.
20. Again, No Shortage of Physicians, editorial, J. A. M. A., Feb. 11, 1922, p. 436. (This is on the report of the committee on medical education of the Philadelphia County Medical Society, published in THE JOURNAL, Feb. 11, 1922, p. 453, which mentioned as one of the reasons for the scarcity of physicians in rural Pennsylvania the long time required to obtain a medical education.)

21. Colwell, N. P.: A. M. A. Bull., December, 1923.
22. Supply of Physicians in Rural England, editorial, J. A. M. A. 80: 1456 (May 19) 1923.

policies in medical education, not only of the Council but even of the American Medical Association itself. As a matter of fact, while I am compelled throughout this article to refer to statements as those of Secretary Colwell because they appear under his authorship, it is my presumption that they represent in large part or entirely the opinions and policies of the Council on Medical Education and Hospitals, for which he, as secretary, is the spokesman.

These statements of Secretary Colwell imply or say directly that the country doctor is not now "a leading citizen;" he has not now "access to every home;" he has not now "all the essential home comforts;" his children do not now have "as good educational opportunities as others" in his community; his "social standing" has been reduced! If there is any group in the community to which these statements do not apply, it is the country doctors in their communities. What sort of country doctors can be in mind? Certainly not the sort that represents ordinary local professional success—not the sort that comes to our national, state and local meetings or which most of us have been meeting professionally for a lifetime. The country doctor is able to render wider and better service now than ever before; he has reaped the benefit of improvement in country social and economic conditions; he is circumstanced so that he can be more useful and by the same token more prosperous than ever before; and he is. As for his social standing and influence, these are, as they always have been when he deserves them, the best there are in the towns and smaller cities—considerably better relatively than in the large cities.

By inference, Secretary Colwell also speaks of the deterioration of economic conditions in the country, for he says, "A restoration of reasonable living conditions in these districts is essential," and restoration implies a previous deterioration. And again: ". . . there will be developments . . . which will *bring back* to the rural communities all of the advantages of education, religion, amusement and recreation." The economic deterioration of the country as a reason for physicians not going to it is a favorite topic in this connection. Let us see what the facts are. A good index of changing rural economic (and social) conditions is found in the successive values of farm property and crops.

The United States Census shows that between 1900 and 1910 rural property increased in value nine times as fast as rural population. Later figures would doubtless be even more conclusive, but they are not available. The value of farm crops almost doubled between 1890 and 1910, and again between 1910 and 1920.[23] Perhaps urban values increased more rapidly, but the point is not the relative increase of urban and rural property, but what has actually happened in the country.

These figures give an intimation of the source of the rural wealth that is represented by the improvement in roads, schoolhouses and other public property, by the addition of water works, electric light plants, telephone systems and other public utilities, by the immense investment in automobiles, and by all of the other additions to rural life which have been so great in the last twenty years and have bettered so much its conditions.

A successful argument for anything cannot be based on the deterioration of the United States up to the present—and the basis of the prosperity of the United States is the country. As J. P. Morgan is reputed to have said, "The man who is a bear long enough on this country will go broke."

Another explanation we offer is the trend toward the cities. "In a recent editorial comment it was *shown* that whatever shortage of physicians may exist in rural communities is due to the general trend of population, including physicians, to the cities. . . ."[24]

I think a consideration of the facts demonstrates that the truth of this statement cannot be shown.

The population of the United States in 1910 was 91,900,000; in 1920 it was 105,700,000, an increase of 13,800,000. This increase was as follows: urban population, 12,140,000; rural population, 1,600,000; increase of urban over rural population between 1910 and 1920, 10,540,000.

The increase in urban population over rural population, which represents the increase of the cities over the country or the trend toward the cities in this decade, was 10,540,000.

Between 1910 and 1920 there was an annual trend of approximately 1,000,000 people toward the cities. It is not entirely accurate, but it is approximately so, to say that on the basis of 91,000,000 population in 1910 this represents an annual trend of 1 per cent. for that decade. No facts showing the trend of medical men toward the cities are available for the whole country, but there are a few facts which are highly suggestive.

D. K. Martin, executive secretary of the Ohio State Medical Society, quotes a recent Ohio survey showing that 75 per cent. of the recent graduates of Ohio medical colleges are residents of the seven largest cities, which leaves 25 per cent. for the rest of the state. To be liberal, we will assume that Ohio has no other cities above 2,500—that all of the rest is rural. On that basis, 25 per cent. have gone to the rural districts and 75 per cent. to the cities, making the increase for recent graduates of the city over the country, or the trend toward the cities, 50 per cent. in recent years.

Emma W. Pope, secretary of the California State Medical Society, in 1923, taking one class at random from one of the California medical colleges, found that there were thirty-nine graduates of this class (of 1917), of which four had gone to smaller towns; that is, 10 per cent. Ninety per cent. had gone to the large towns, a trend of 80 per cent. in this class toward the cities.

C. N. Meader, dean of the University of Colorado School of Medicine, reports that in Colorado out of 105 graduates from 1916 to 1922, fourteen, that is, a little less than 14 per cent., are in smaller towns, and 86 per cent. in larger towns, leaving a trend toward the cities in Colorado of more than 70 per cent.

As will be shown a little later, the trend of Johns Hopkins graduates toward the cities is nearly 95 per cent.

23. The value of farm property and buildings in 1900 was 33 billion dollars; the same value in 1910 was 68 billion dollars. Rural population increased in the same period from 44 million to 49 million; that is, rural population increased about 11 per cent. while the value of farm property and buildings increased from 33 billion to 68 billion—106 per cent. increase. Wealth increased more than nine times as fast as population. In 1900 the average value of land per acre was $15.57; of all property, $24.27. In 1910 the average value of land per acre was $32.40; of all property, $46.64, an increase of 108.01 per cent. The value of farm crops was as follows: 1889, 5 billion; 1910, 9 billion; 1920, 18 billion (high price year); 1922, 14 billion (low price year).

24. Hospitals and Physicians for Rural Communities, Current Comment, J. A. M. A. 76:1107 (April 16) 1921.

"In one typical rural and prosperous agricultural county (New York State) having a population in 1910 of 38,000 and in 1920 of 37,000, there were, in 1912, sixty-two physicians and in 1922, forty-four," [23] a trend of population of one thirty-eighth, say 3 per cent., away from the county, and of doctors of eighteen sixty-fourths, say 25 per cent., away from the county.

In short, widely distributed figures indicate that the trend of young physicians to the cities is easily twenty-five or fifty times as great as that of the population in general. And it is the trend toward the cities of the young physicians alone that is of importance; the others will soon be dead. As Lively,[3] the rural sociologist, comments on the Ohio figures quoted above, "The marked age differences between city and country indicate that the country places are no longer receiving their proportionate quota of young physicians."

Some light is thrown on this subject by the report of the Carnegie Foundation for the Advancement of Teaching, in its study of the distribution of physicians, lawyers and clergymen, which shows that in the preceding decade there has been: 4.3 per cent. increase in physicians; 8.5 per cent. increase in lawyers, and 25.6 per cent. increase in clergymen. Since among the physicians there were included 14,700 nondescript healers and 5,000 osteopaths—a total of 20,000 of the 167,700, or 12.5 per cent., it would seem that there has been an actual decrease of physicians instead of an increase of 4.3 per cent.[16]

Another explanation in line with the foregoing is that, with improvement in transportation and changes in customs of the rural population, country people are now going to the cities for their medical services to such an extent that the rural practitioner cannot make a living as he formerly could. This point is elaborated in the first section of Secretary Colwell's article and in an editorial in THE JOURNAL.[22] Arguments of this sort are always appealing, for it is human to feel that our difficulties are peculiarly great and new; that the supposed freedom from care of our predecessors was due to the fact that they did not have our troubles. It is a variation on the familiar theme of the good old days. The present economic condition of rural practitioners refutes this argument.

In reply to arguments of the foregoing sort, a good illustration is found in the community in which I was born. It is an old, typically American, prosperous rural community. The county (22,000) and the town (2,500) have remained practically stationary in population for the last forty years, while the material prosperity of the community—town and country—has increased enormously. The town is now a well equipped miniature city. It is located 40 miles from Louisville, with train service, railroad fares and custom among the people of going to Louisville, that make it almost a suburban town. There are hardly any specialists now, except the roentgen-ray men, who were not in Louisville forty years ago, and the people were accustomed at that time to go to the city for all sorts of special medical service. That, in short, is not a new aspect of the problem of physicians there. Perhaps they go more frequently now with their automobiles; nevertheless, the physicians' situation has improved with the material improvement in the community. Practice is more comfortable for them and they are more prosperous; yet, there is only one graduate of the last ten years in the county and none in the county seat, and the physicians' average age is 52 years. It is recognized there by intelligent people that under present conditions of medical education a dearth of physicians is impending.

As a matter of fact, our statements and arguments on rural conditions indicate a lack of grasp of or sympathy with them, and a pessimism that is based on the necessities of the argument or on preconceived notions. No one with his eyes open, who has known the country for the last twenty-five years, can go over it today and then seriously argue that there has been any general deterioration of the social and economic conditions of rural physicians or of rural districts.

The explanations we are offering do not account for the rapidly developing shortage of rural physicians. It is not a result of deterioration of social and economic conditions in the country that demand "restoration." It is a movement very much more rapid than the general trend of population toward the cities. It is not due to the "decline" of the country doctor. The rural districts remain; they contain 52 million people—48.5 per cent. of our population—who are more prosperous and more comfortable than they have ever been before. And responsibility for the failure of medical service for them cannot be met on our part by shifting the burden to deterioration of social and economic conditions. Even if deterioration had occurred, it would not relieve us of our responsibility for meeting the problem.

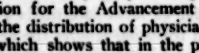
(To be continued)

23. Conference of State and Provincial Health Authorities, 1923.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

ANTIMONY SODIUM THIOGLYCOLLATE.—The compound formed by dissolving antimony trioxide in a solution of a mixture of sodium thioglycollate and thioglycollic acid.



It contains not less than 37 per cent. of antimony.

Actions and Uses.—The same as antimony thioglycollamide. It is more soluble than antimony thioglycollamide, and in higher dosages it appears to be less toxic.

Dosage.—From 0.05 to 0.1 Gm. (1 to 2 grains) dissolved in 10 to 20 Cc. of sterile water every third or fourth day until from 15 to 25 injections have been given. Its solutions are incompatible with solutions of the fixed alkalis.

Manufactured by Hynson, Westcott and Dunning, Baltimore. No U. S. patent or trademark.

Antimony sodium thioglycollate is a white or faintly pinkish powder; colorless or having a faint odor of mercaptan; very soluble in water; insoluble in alcohol.

Add a drop of diluted hydrochloric acid to 3 Cc. of a dilute solution of antimony sodium thioglycollate (1-100) and add two drops of 1 per cent. ferric chloride solution. A transient blue color results. Add a drop of 1 per cent. ammonia water to this mixture and shake. A Burgundy red color results. Add a few drops of sodium hydroxide solution to a dilute solution of antimony sodium thioglycollate (1-100), a white precipitate is produced. Dissolve about 0.1 Gm. of antimony sodium thioglycollate in 2 Cc. of water, add a few drops of diluted hydrochloric acid and pass in hydrogen sulphide; an orange colored precipitate is produced.

Weigh accurately from 0.2 to 0.3 Gm. of antimony sodium thioglycollate, dissolve it in about 100 Cc. of warm water, add 1 Cc. of diluted hydrochloric acid, pass in hydrogen sulphide until precipitation is complete and allow to stand 30 minutes. Collect the antimony sulphide in a weighed Gooch crucible, wash it successively with water containing hydrogen sulphide, alcohol, ether, carbon disulphide, alcohol and ether, dry the residue at 110 C. and weigh. The antimony sulphide corresponds to not less than 37 per cent. of antimony.

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SATURDAY, JANUARY 31, 1925

ON REVISING THE MEDICAL CURRICULUM

An "outsider" objectively examining the seemingly endless number of criticisms of current medical education may well gain the impression that the entire system, along with its substructure of preliminary or premedical training and the superstructure of internship, has been built on wrong lines. The adverse comments touch almost every detail of its architecture. We are told that, by reason of the prolonged course of study entailed, the present-day scheme tends to eliminate the poor boy from the pursuit of a medical career. One consequence of this is perhaps the reduction of the number of physicians in the rural districts. A recent report admits [1] that it was in former days chiefly students of small resources who, in immediate need of funds on graduation, were willing to accept the hardships and isolation of rural practice for the certainty of immediate returns. Yet whether in point of fact the "poor boy" forms any smaller proportion of the medical student body of today than he formerly did is a question on which no reliable data have been, or indeed well could be, assembled. So far as the belief has foundation in actual observation of the medical student body over the last twenty or twenty-five years, moreover, Mayers and Harrison remind us that the general economic level has risen substantially in this period, carrying with it all classes, and, correspondingly, all classes of medical students. Not a few educators rebel at the thought of cheapening medical education by lowering the scientific standards in order that more poor persons may become physicians. Years ago, Billroth [2] insisted that all civilization begins with property. The development of industry, of art, of the sciences is dependent on property, which is in turn increased by development. This is an ancient natural process. How, he asks, can it be otherwise in the physician's art? That is why the great Viennese surgeon considered it his duty to dissuade any one from the study of medicine who has not at his disposal a certain minimal amount of money, education, industry and talent.

A few years ago, blame was placed on inadequate premedical training in explanation of the shortcomings of the modern physician. An increase in the number of prescribed courses in science demanded by the better class medical schools naturally followed. Now we are told that it is becoming more and more questionable whether the added requirements are producing the desired results. The latest critic [3] asserts that, since medicine is an art as well as a science, the cultural subjects and the humanities should be given greater consideration than they now receive. The implication is, Koch [3] adds, that the scientific instruction is the important phase of the premedical training and that nothing else matters. While this may be true, so far as immediate needs go, it is equally true that such reasoning ignores the needs of the future. Both types of subject are certainly essential, and neither can replace the other. Whereas too much emphasis on the scientific side tends to make the student an unsympathetic and "cold-blooded proposition," the broadening influences of these other subjects, Koch continues, make for a humanized being.

It is perhaps easy to place too much emphasis on the method of training and on the detailed content of a preparation for the practice of medicine. The subject has become cyclopedic in character; and the mastery of every chapter, item after item, can be resolved into a mere memory stunt. A comparison of the "learning" that a dozen highly successful physicians were forced to acquire through the medium of curriculum prescription would probably show surprising diversity. It is undoubtedly true that students can be well grounded through the medium of many courses. Cushing [4] remarked before the annual congress on medical education at Chicago last year that experience has shown that it perhaps does not make any very great difference, provided Nathan Smith is on one end of the log, with the right kind of students, and not too many of them, on the other; and that we are pressing for formulas to solve something for which there is no formula. The personal equation of the teacher does not appear in the syllabus issued from the dean's office, though it is known in every students' boarding house.

Would it not be well, then, to persist in directing the student's attention more emphatically to the objects to be sought rather than to details of subject-matter, and to urge him to focus it sharply on the problems that confront the practitioner. That is, after all, the way of everyday life. There are jobs—tasks that are easy, and some that are difficult—to be done. Only as one realizes what is to be done can one plan and

1. Mayers, L., and Harrison, L. V.: The Distribution of Physicians in the United States, New York, General Education Board, 1924.
2. Billroth, T.: The Medical Sciences in the German Universities, New York, the Macmillan Company, 1924.
3. Koch, E. W.: Preprofessional Training as Revealed by the Needs of the Physician, Science 60:380 (Dec. 26) 1924.
4. Cushing, Harvey: The Clinical Teacher and the Medical Curriculum, J. A. M. A. 83:841 (March 15) 1924.

perform effectively. As Koch recently asserted, the practice of medicine implies (1) an ability to diagnose the patient's ailment, and (2) an ability to take care of the patient; i. e., to treat him by any one or more of all the known and recognized preventive and remedial measures that the diagnosis might indicate and suggest. The ultimate aim of medicine is, further, to prolong life and to preserve as well as restore health. The candidate for licensure should be made deeply conscious of his forthcoming duty. If we could be certain that he will develop a conscientious appreciation of it, there would be less need of worrying so much about the details of the medical curriculum. To do one's duty well, one must first see where it lies.

THE TRUDEAU SANATORIUM, 1885-1925

The present year is the fortieth anniversary of Edward Livingston Trudeau's foundation, in the Adirondack region, of the institution that bears his name. It has been made the occasion for the publication of special tributes[1] to this pioneer in an important field of therapy. Every one who is familiar with the rationale of the modern treatment of tuberculosis appreciates, to some extent at least, the part that the Trudeau Sanatorium has played in the development of the work. As a recent commentator has remarked, the last twenty years have seen the influence of Trudeau magnified hundreds, indeed, thousands of times, and this spirit extended not only to the utmost confines of the United States, but literally round the world.

The story of Trudeau's life, early filled with personal handicaps that would have thwarted the ambitions of most persons, is an inspiration in itself.[2] Courage and perseverance were ingrafted into his make-up. Discouragements were met with optimism. Self-sacrifice and service ministered to success in his life. He was the embodiment of the spirit of helpfulness to others. It has been said that Trudeau accomplished his work, great or small, by reason of his humanity. The man was far more, however, than a patient sufferer, a worthy physician and a helpful consultant. Trudeau established a great educational center, in which, above all, there was emphasis on the importance of rest. Edward R. Baldwin has asserted that we can survey the last forty years in American medical practice and find little contributed to the fundamental principle of rest from sources other than the Trudeau Sanatorium. The numerous physicians who passed through the institution as patients steadily carried the idea throughout the country, and it slowly took root. Allen K. Krause maintains that a critical review of the enormous body of work that was published on active immunization during the last decade of the nineteenth century will show that Trudeau was the first investigator to grasp the principles of tuberculosis immunity—of the conditions under which it occurs. Before 1900 he stated definitely and without equivocation that infection and, as nearly as he could make out, infection only, gave rise to the immune state. By 1901 and 1902, neither Koch nor Behring had had this fact driven home, and most of the greater investigators were floundering hopelessly in a verbiage of nebulous things conceived as inhabitants of the blood. In his modest working place at Saranac Lake, Trudeau discovered essentially the same substance as that which Koch designated as tuberculin. The early claims of Koch regarding the therapeutic virtues of his tuberculin failed to be established. "Trudeau," writes the devoted pupil, "found that his substance would not prevent or cure tuberculosis in guinea-pigs, and said so; and his report made not even a ripple of comment. Trudeau was the better scientist."

It has been a helpful circumstance that a large group of patients treated at the sanatorium in its earlier days represented the professions. There have been several hundred physicians, medical students and nurses, together with a larger group of teachers, lawyers, clergymen and others drawn from such active walks of life. They came from a wide territory, chiefly east of the Mississippi River, and many of them settled later in the western climatic resorts and promulgated the ideas there. There exist today in the Adirondack center the sanatorium, the foundation for scientific studies, established after the death of Dr. Trudeau as a memorial, the Trudeau Institute for Tuberculosis, and a training school for nurses. Such is the heritage that can be claimed from the life work of an American pioneer in medicine.

1. Journal of Outdoor Life, January, 1925.
2. Trudeau, Edward Livingston: An Autobiography, Doubleday, Page & Co., 1915.

ENDOCRINOLOGY AND OTOLARYNGOLOGY

It is significant that the introductory contribution to the newly launched *Archives of Otolaryngology*[1] strives vigorously and frankly to liberate the devotees of the specialized practice in disorders of the ear, nose and throat from some of the shackles of pseudo-scientific medicine with which they have all too often been encumbered. Readers of THE JOURNAL are aware of its attitude toward the various and numerous claims of endocrine therapy recorded in an enormous number of printed pages. Writing with the insight of the experienced investigator, Carlson[1] has clearly pointed out the tests which allegations of specific function on the part of endocrine organs must meet:

> First, we remove the endocrine organs in question in otherwise healthy animals, and we note the natural history of the sequelae of such removal. Then we feed or inject this animal with various preparations of the organ removed, and determine to what extent these administrations change the natural his-

1. Carlson, A. J.: Relation of the Endocrine Glands to Disorders of the Ear, Nose and Throat, Arch. Otolaryngol. 1:1 (Jan.) 1925.

tory of the defects in the animal following the loss of the organ. Having such experimental data, we try to check these up on patients in whom we have evidence that the disease is due to hypofunction of a specific endocrine gland. By following the same rigid scientific control and reasoning as in the case of the experimental work, we can secure equally reliable data in the clinic as in the laboratory as to the efficiency of a particular endocrine product in a particular malady; but if we do not weigh the patient's statements when they are not checked up by objective tests, if we let our own enthusiasm run away with our judgment, if we forget the natural ups and downs in the malady, and, particularly, if we try a whole series of therapeutics simultaneously (irrespective of what the results in the patients might be), we can draw no reliable conclusions as to the specific effects of the organotherapy in question.

Considered from this standpoint, the gonads—the testes and ovaries—are at once eliminated from the competition for recognition; for they have not yet been accused of producing diseases of the ear, nose or throat. There is no reliable evidence that hyposuprarenalism, if such a condition actually exists clinically, can initiate disturbances of these organs. With respect to the pancreas, there is no indication that diabetic patients show an unusually high percentage of ear, nose and throat infections, or enlarged adenoids or tonsils, although they show some impairment of tissue repair in general and decreased resistance to infection. Carlson protests, in particular, against current attempts at roentgen-ray therapy of the hypophysis in certain types of deafness. It cannot stimulate, rejuvenate or restore tissues, as the blatant advertisements would lead us to believe. Careful experiments on the question whether the roentgen ray in any strength or any duration of application is capable of actually stimulating a gland have so far proved absolutely negative. Roentgen-ray treatment, in quantities that affect glands, seems to depress or destroy them without primary stimulation. At present, therefore, on the basis of demonstrated facts, the use of the roentgen ray to stimulate hypo-active glands is not only empiric but contrary to facts. There is no warrant for putting parathyroid tissue into the "pluriglandular pie" fed to patients. The parathyroids have been irradiated in cases of otosclerosis, despite the lack of evidence that hypofunction or hyperfunction of the parathyroids is a factor in the recognized diseases of the ear, nose and throat, even if we admit that the parathyroids are involved in bone and calcium metabolism. Carlson concludes that, as far as we can see at present, the thyroid is the only endocrine gland and the only field of organotherapy that calls for a serious survey and investigation from the point of view of possible relations to the infectious diseases of the ear, nose and throat, even in cases in which distinct cretinism and myxedema are absent. Those who are gullible may follow the faker's lead and deride such conservative, sane advice; but the profession at large should be thankful for an occasional critic who will pilot us safely through the "dense fog of pseudoscientific and pseudomedical writing."

BREAST MILK AND RICKETS

Pediatricians believe at present that rickets is so common in the large cities of America and Europe that few children among the poorer classes are untouched by it. It is now asserted with confidence [1] that the disease may develop on any milk mixture and on almost all foods or combinations of them ordinarily given to children. More surprising, however, is the generally admitted further circumstance that even breast-fed infants may develop rickets. A recent writer [2] has remarked that the rôle of the calcium ion in the metabolism of rickets has for a good many years formed the keystone of the arch in the study of this disease. The conception, recently advanced by Howland and his associates, of the existence of two forms of rickets, the low calcium and the low phosphorus types, is based chiefly on the chemical study of the blood. Experimentally, the feeding of low-phosphorus diets to animals leads to the production of true rickets, whereas low-calcium diets lead not to true rickets, but to osteoporosis. It is a fact that in all forms of rickets the body as a whole shows a marked lowering of its calcium content.

It might naturally be concluded that when rickets arises in breast-fed infants, the mothers' milk shows a deficiency in those inorganic components, calcium and phosphorus, most directly concerned with disordered metabolism of the bones. The studies of von Meysenbug [3] and DeBuys [2] at New Orleans make it seem unlikely that such a shortage of these elements in the breast milk consumed is at fault. They have corroborated the findings of Burhans and Smith [4] that the average calcium content of the milk in white races (31 mg. Ca per cent.) is higher than that of negro women (25 mg. Ca per cent.), an interesting observation in view of the fact that in our cities rickets is more prone to develop in negro children. Nevertheless, in some of the most severe cases of rickets the calcium content of the breast milk has been found to be well within the normal range. Essentially similar facts have been brought out by Telfer [5] in Scotland. By determining the mineral content of specimens of breast milk of women living under poor conditions in the industrial quarters of Glasgow, he found no appreciable differences in the composition of the milks, whether the infants did or did not develop rickets. The fat content of several specimens of both groups was abnormally low. Specimens from healthy women living in country villages were examined for purposes

1. Park, E. A.: The Etiology of Rickets, Physiol. Rev. 3: 106 (Jan.) 1923.
2. DeBuys, L. R., and von Meysenbug, Ludo: The Calcium Content of Breast Milk in Relation to Rickets, Am. J. Dis. Child. 27: 438 (May) 1924.
3. Von Meysenbug, Ludo: The Inorganic Phosphate Content of Breast Milk of Mothers with Normal and with Rachitic Infants, Am. J. Dis. Child. 24: 200 (Sept.) 1922.
4. Burhans, C. W., and Smith, D. N.: The Inorganic Constituents of Human Milk, with Particular Reference to Racial Variations, Am. J. Dis. Child. 26: 303 (Oct.) 1923.
5. Telfer, S. V.: The Mineral Content of Human Milk in Normal and Rachitic Families, Biochem. J. 18: 809, 1924.

of comparison. In these the ratio of phosphoric acid to lime was slightly higher than in the milk of women living in a poor environment. Such facts are taken to confirm the earlier conclusions of Schabad[6] that infantile rickets can occur when the calcium content of the breast milk is normal or even above normal, so that a deficiency of calcium in the milk cannot be the only cause of rickets. It will therefore be conducive to therapeutic progress if attention is directed to other possible etiologic factors that may be remediable.

Current Comment

CIRCULATORY RESPONSES TO ANOXEMIA AT HIGH ALTITUDES

When the body is subjected to conditions in which the supply of oxygen is diminished, a number of circulatory reactions and changes in the blood are likely to ensue. This is true during the anoxemia associated with high altitude or atmospheric conditions that simulate this. Such departures from normal physiologic function are not the only variations in response noted. The respiration also is wont to be altered. All these manifestations have been regarded as adaptive changes evidently initiated automatically for the purpose of affording a more adequate oxygen supply to the tissues. Many, if not most, writers have regarded the circulation as the factor of foremost importance in the attempted compensation for lowered oxygen. Schneider,[7] however, has pointed out that of the several physiologic responses made to such conditions, especially as experienced during a residence at a high altitude, those affecting the circulatory system are most temporary and tend to disappear, even though they may be maintained in part, while the respiratory and blood changes are of a permanent character. More recently he[8] has reinvestigated the circulatory responses of man to anoxemia, at the School of Aviation Medicine on Mitchel Field. Contrary to earlier indications, it now appears from estimates of the minute volume of the heart that its output is not ordinarily increased during a shortage of oxygen, and that it may sometimes be decreased. The capillary blood pressure is not affected by anoxemia. The flow of blood through the capillaries, in some cases of extreme anoxemia, is gradually retarded, while the blood passes from a homogeneous to a granular appearance, and sometimes to a clumped condition of the red blood corpuscles. Consequently, as the output of the heart does not increase and the venous return to the heart becomes subnormal during acute anoxemia, it becomes necessary to look on the increase in the frequency of the heart beat and the diastolic arterial blood pressure fall as symptoms of distress rather than means of compensation to low oxygen. This is an important conclusion, for it will prevent interpretations of circulatory changes so as to give those concerned a false sense of security. It is timely, too, because adjustments to altitude have become a daily necessity for many persons at the present time.

6. Schabad: Jahrb. f. Kinderh. 74: 511, 1911.
7. Schneider, E. C.: Physiol. Rev. 1: 631 (Oct.) 1921.
8. Schneider, E. C., and Truesdell, Dorothy: The Circulatory Responses of Man to Anoxemia, Am. J. Physiol. 71: 90 (Dec.) 1924.

DEATH OF SIR JAMES MACKENZIE

In the death of Sir James Mackenzie, medicine has lost one of its most justly honored leaders. He will be remembered best for his valuable contributions concerning heart disease and especially for his pioneer investigations on the irregularities of the heart, investigations carried out for the most part with the aid of the polygraph while he was a busy practitioner in a small town. These researches were not only of permanent value as an addition to knowledge but they served to stimulate others to productive work. Hardly less important were his trenchant criticisms, both destructive and constructive, of present-day methods of teaching and practice. In papers, addresses and books he emphasized the importance of the rôle that could and should be played by the general practitioner. He showed how the family doctor, better than the hospital physician, could study disease in its entirety, watching its progress from beginning to end; also how he could more intelligently study the development and meaning of symptoms of whose real significance we are still far too ignorant. Mackenzie was always an interesting writer, clear and forceful in expression. He was frank to confess ignorance when he was uncertain as to facts or views; but when he felt sure of his position he was dogmatic, blunt, bold in contradiction. If at times he seemed provincial in his views; if, unwittingly, because of failure to read the writings of others, he repeated as new what had been said before; if he was unduly severe in his strictures on the hospital and laboratory worker, he yet made lasting contributions to our knowledge of cardiac diseases, rendered yeoman's service in stimulating other workers, and pointed out serious defects in the medicine of the present and how they might be remedied in the medicine of the future. He was a medical Thomas Carlyle, growling at fads, tearing the mask from shams, preaching the doctrine of the equality of the lowliest physician with the mightiest, proclaiming the value of the fundamentals, the eternal verities of medicine, as against the transient, the popular or the merely traditional.

BLOOD LIPOIDS IN DIABETES

For many years, the center of diagnostic interest in relation to diabetes lay in the sugar output in the urine. Presently, attention was directed also to the glucose content of the blood. The consideration of the pathology and also the treatment of diabetes is not complete in the light of present-day information, however, without some reference to the possibility of a faulty metabolism of fats as well as a perverted use of carbohydrates in the organism. Diabetic lipemia is becoming a familiar expression. "With an excess of fat," Joslin has written, "diabetes begins, and from an excess of fats diabetics die." Although the routine estimation of the circulating fat is a comparatively

recent innovation in blood chemistry, sufficient data are already at hand to indicate that the blood fat is above normal with a consistency equal to the changes in blood sugar in diabetes. According to Gray,[1] for example, who has had unusual experience in such studies, among more than a thousand samples of blood of patients, 78 per cent. had blood fats above 0.67 gm. for each hundred cubic centimeters, which is the high limit of normal, while 72 per cent. had blood sugars above 0.11 gm. before breakfast. Strikingly high blood fats are, however, infrequent. Gray has observed that the longer the duration of the diabetes before examination the lower the blood fat, presumably because only those patients live long who have a low fat content; that is, mild diabetes. Until recently it was so customary for patients with diabetes to depend on large quantities of fat in their diets to furnish sufficient energy to the body that one can readily understand how the view gained credence that lipemia in such persons is associated largely with the fat intake. However, Marsh and Waller,[2] who have observed the effect of the so-called "high fat diets" of Newburgh and Marsh, can find no justification for the assumption that diabetic hyperlipemia is dependent on excessive intake of fat. Even with such diets, a progressive fall of blood fat under treatment may be noted. In view of this, one cannot escape the conviction that persistent lipemia is connected in some way with the metabolic defect more than with dietary conditions; and, consequently, data regarding the blood fat may furnish a guide to prognosis. Indeed, Gray's data are already interpreted by him to demonstrate the rule that progressively each group with a higher blood fat level is characterized by a distinctly shorter life expectancy. Incidentally, it may be noted that a knowledge of the content of blood fat may aid materially in the diagnosis of renal glycosuria, for the latter may be ruled out whenever there is a coincident lipemia of excessive proportions.

THE EDUCATED PHYSICIAN

The assumption that a particular category of studies furnishes the key to produce a "humanized" being, and that the much vaunted "cultural" influences are derived from a particular group of collegiate studies, usually conceived to be nonscientific in character, appears to be warranted only by unestablished opinion. Billroth once remarked that culture is always an aristocratic thing. The physician, the school teacher, the lawyer, the clergyman, should be the best men of their village, of their city, of the circles in which they move. In order to be so they must have the superpower that comes with knowledge and skill, and this is acquired only through the hard work of study, and even more through the cultivation of the inner urge to study. But in final analysis it is something more than the subject-matter learned that characterizes the truly educated man. A person may have acquired from books a vast amount of medical knowledge, he may even have memorized from books the technic of its application; such a person has much knowledge of medicine, and yet with it all he is no physician. And similarly, specific courses do not determine the potential character of an education. Huxley had a better conception when he wrote: "That man, I think, has had a liberal education, who has been so trained in youth that his body is the ready servant of his will, and does with ease and pleasure all the work that, as a mechanism, it is capable of; whose intellect is a clear, cold logic engine, with all its parts of equal strength, and in smooth working order; ready, like a steam engine, to be turned to any kind of work, and spin the gossamers as well as forge the anchors of the mind; whose mind is stored with a knowledge of the great and fundamental truths of Nature and of the laws of her operations; one who, no stunted ascetic, is full of life and fire, but whose passions are trained to come to heel by a vigorous will, the servant of a tender conscience; who has learned to love all beauty, whether of nature or of art, to hate all vileness, and to respect others as himself."

1. Gray, Horace: Lipoids in One Thousand Diabetic Bloods, with Special Regard to Prognosis, Am. J. M. Sc. 168:35 (July) 1924.
2. Marsh, P. L., and Waller, H. G.: The Relation Between Ingested Fat and the Lipemia of Diabetes Mellitus, Arch. Int. Med. 31:63 (Jan.) 1923. Blatherwick, N. R.: Observations on Blood Fat in Diabetes, J. Biol. Chem. 49:193 (Nov.) 1921.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Medical Broadcasting.—The San Francisco County Medical Society is conducting a radio broadcasting program of health talks from station KFRC each Wednesday evening about 9 p. m. Thirteen talks had been broadcast up to Dec. 17, 1924. Any member of the society may apply to the radio committee for placement on the program. Names, introduction and subject matter are all subject to review by the committee two weeks before the talk is given.

Insufficient Evidence and Suspended Sentence.—*California and Western Medicine* notes that three Chinese herb doctors were recently arrested in San Francisco for violation of the medical practice act, but were dismissed by Police Judge Golden on the ground of insufficient evidence.——A physician in Visalia recently reported to *California and Western Medicine* a woman unlicensed to practice medicine, who was "doing some dangerous things." The state board of medical examiners investigated the case and promptly made the arrest. The woman pleaded guilty before a judge in Fresno and was given a suspended sentence of six months.

The Abrams Estate.—After nearly a year of litigation over the estate of the late Dr. Albert Abrams, a compromise agreement has been reached by which the so-called "College of Electronic Medicine," which Abrams made heir to the bulk of his estate, shall retain certain paraphernalia and certain funds; but the bulk of the estate, estimated at $2,000,000, will be divided among individual heirs. It is reported that the "college" building, now nearly completed, at Hyde and Sutter streets, San Francisco, would be left to the institution, as well as numerous oscilloclasts, and that the "college" will be left to work out its own future with funds allowed which are sufficient for present maintenance.

Society News.—The Fresno County Medical Society recently elected Dr. Axcel E. Anderson, president; Drs. William G. Milholland and Charles A. James, vice presidents; Dr. Thomas Floyd Bell, secretary, and Dr. J. A. Montgomery, assistant secretary.——Dr. William J. Kerr, San Francisco, addressed the Sacramento County Medical Society recently on "Modern Methods of Treatment of Heart Disease."——Dr. George Piness, Los Angeles, addressed the San Bernardino County Medical Society, Dec. 2, 1924, on "Allergy."——The

Sonoma County Medical Society elected, Dec. 11, 1924, Dr. Allen M. Thomson, Sonoma, president; Dr. George W. Mallory, Santa Rosa, vice president; Dr. Guy A. Hunt, Santa Rosa, secretary, and Dr. Reuben M. Bonar, Santa Rosa, treasurer.

FLORIDA

Dr. Groover Honored.—The associates of Dr. William R. Groover, Lakeland, gave a banquet in his honor New Year's eve, on the occasion of his retirement from practice, and presented him with a gold watch.

ILLINOIS

Scarlet Fever.—During the last two weeks, an average of seventy-five cases of scarlet fever a day have been reported to the state department of health, and 4,000 cases have been reported since Nov. 1, 1924.

Physician Held to Grand Jury.—Dr. James M. Miller, Danville, who was arrested, Dec. 21, 1924, was arraigned before the U. S. commissioner, and waiving examination, was held to the federal grand jury under $2,000 bond, on a charge of violating the Harrison Narcotic Law, it is reported.

Dysentery at Greenville.—Practically the entire population of Greenville, and persons who visited there (nearly 3,000 in all) are "down with dysentery," according to the state department of health. The outbreak was due to a faulty sewer pipe which allowed sewage to seep into the tile water main.

Peoria Hospital Protests Rating.—The staff of St. Francis Hospital, Peoria, has requested publication of the fact that it has passed resolutions demanding that its name be omitted from any of the classifications of the American College of Surgeons, and refusing admittance to representatives of the college. The difficulty seems to lie in a reduction of the rating made recently, apparently without notifying the hospital of the reasons for the action taken.

Resolution of Council of State Society.—At the December meeting of the council of the Illinois State Medical Society, a resolution was passed on the conduct of clinics, for the purpose of which the word "clinic" was defined as follows:

1. A free clinic for the benefit of the indigent poor. These clinics shall be either under direction of, or by consent of, the local county medical society. Physicians shall give their services gratis, to which service only the indigent poor shall be entitled.

2. Clinics for the benefit of the profession. These clinics shall be either under the direction of or by the consent of the local county medical society. The prime object of these clinics shall be for the instruction and guidance of the physician and to which he may bring his private cases.

Physicians conducting clinics of any nature must conform to the same ethical rules as one in private practice and will be held accountable for his conduct by his local medical society (Sections 4 and 8, Article 2, Principles of Medical Ethics of the American Medical Association).

Each local society must decide as to the policy of its clinics, make its own rules and see that said rules are enforced.

The resolution suggested that the Illinois State Medical Society should supervise all so-called "baby shows" or "baby conferences" held in the state, and that they should be under the direct supervision of the local medical society in the county in which they are held.

Chicago

Medical Society to Honor Association Trustees.—The North Side Branch of the Chicago Medical Society is to give a dinner dance, February 5, at the Belden-Stratford Hotel, Chicago, in honor of the officers and trustees of the American Medical Association, who will be in session in Chicago on that day. Addresses will be given by Drs. William A. Pusey and William D. Haggard.

Dr. Pusey Guest of Honor.—Dr. William Allen Pusey, President, American Medical Association, addressed the Chicago Dermatological Society at its twenty-fifth anniversary meeting, January 21. Dr. Pusey, a charter member of the society, was the guest of honor; other charter members present were Dr. David Lieberthal and Dr. Lucius C. Pardee. Dr. James H. Mitchell, president of the society, read a paper on "The Institutionalization of the Practice of Medicine."

Dr. Cutter Appointed Dean at Northwestern.—The board of trustees of Northwestern University, January 27, appointed Dr. Irving S. Cutter, Omaha, dean of the medical school. Dr. Cutter has since 1913 been professor of biochemistry and director of laboratories, and, since 1915, dean of the medical school at the University of Nebraska. He was editor of the *Nebraska State Medical Journal*, 1916-1918, a captain in the Medical Corps, U. S. Army, 1918-1919, and is now a lieutenant-colonel in the medical officers reserve corps. Dr. Cutter will take up his work at Northwestern in June or July.

National Baby Congress.—Sponsored by the Illinois State Medical Society, a national baby congress and health exposition will be held, May 2-9 (National Baby Week), at the American Exposition Palace, 666 Lake Shore Drive, to furnish the public dependable information concerning health, comfort and public safety, and to afford manufacturers and retailers of dependable products an opportunity to display them in an exposition of unquestioned integrity. The congress is not for profit. The financial management is in the hands of the American Exposition Palace. Exhibitors must meet the standards of the Illinois State Medical Society.

Society News.—The Visiting Nurse Association of Chicago held its thirty-fifth annual meeting, January 15, at the Blackstone Hotel. Mrs. Joseph M. Cudahy was reelected president. ——Dr. Samuel A. Matthews, Chicago, will address the Chicago Society of Internal Medicine, February 23, at the City Club on "The Effect of Slow Degeneration of the Liver on Sugar Metabolism" and "Diabetes Mellitus in a Dog with a Diminutive Pancreas"; Dr. Carl H. Greene, Rochester, Minn., will speak on "A Study of the Functional Capacity of the Liver in Health and Disease," and Dr. Joseph L. Miller on "Is the Action of So-Called Specific Drugs a Directly Parasiticidal One?"——Dr. Anton J. Carlson, professor of physiology, University of Chicago, addressed the Chicago Medical Society, January 21, on "The Tonus of the Blood Vessels," and Dr. Wilber E. Post on "Paroxysmal Tachycardia."—— The Chicago Dental Society held its sixty-first annual meeting and clinic at the Drake Hotel, January 21-23, which was attended by dentists from all parts of the United States and Canada.

INDIANA

"Clinic" Quits Business.—The "Marion Medical Clinic," Fort Wayne, decided to close, January 14, it is reported, at the suggestion of a representative of the state board of medical registration and of the Better Business Bureau.

Madison County Medical Society.—The next four meetings of this society will be held with various luncheon clubs in Anderson. Dr. Thomas J. Beasley, Indianapolis, addressed the January 27 meeting held with the Rotary Club, on "The Ideals of the Medical Profession."

Podiatry Bill Passed Over Veto.—By a vote of thirty-six to ten, the senate approved the podiatry bill providing for the licensing of podiatrists, January 20. The measure became a law immediately, as it had previously passed the house by a vote of seventy-eight to eleven over the veto of the former governor. The last vetoed measure to be passed by the assembly was passed in 1909.

Two Chiropractic Bills Within Three Days.—Representative Wright introduced a chiropractic bill, January 15, which would provide for a state board of five chiropractic examiners, who have practiced continuously for three years, and that subsequent members of the board be graduates of a school of chiropractic which gives a course of three years and six months, and that no officer or employee or person financially interested in any chiropractic school be appointed a member of the board. This was the second chiropractic bill to be introduced within three days.

Osteopaths Seek Injunction Against Medical Societies.—Dr. Marion E. Clark and Clarence B. Blakeslee, Indianapolis, who operate the Clark-Blakeslee Hospital, and, it is reported, practice osteopathy, filed a suit, January 20, in superior court to prevent the Indianapolis Medical Society and the Marion County Medical Society from enforcing a recent resolution (THE JOURNAL, January 10, p. 125), which, it is said, forbids physicians to perform operations in osteopathic hospitals. The petitioners allege that the resolution was adopted to interfere with their business and ask that the respondents be restrained from enforcing the resolution or disciplining physicians who practice at the petitioners' hospital.

IOWA

Society News.—The Twin Lakes District Medical Society, Rockwell City, January 15, devoted its third annual meeting entirely to the study of prophylaxis of common diseases. Dr. Thomas Parran, Jr., Springfield, Ill., representing the U. S. Public Health Service, spoke on "Public Health and Preventive Medicine"; Don M. Griswold, director of laboratories, state board of health, Iowa City, on "Modern Methods of Communicable Disease Control."——Elmer V. McCollum,

Ph.D., Johns Hopkins University School of Hygiene and Public Health, Baltimore, addressed the Des Moines Academy of Medicine, January 17, on "Our Present Knowledge of Vitamins."

KENTUCKY

Society News.—At the annual meeting of the Jefferson County Medical Society, Louisville, Dec. 16, 1924, Dr. Edward R. Palmer was elected president; Drs. James H. Pritchett and Isaac A. Arnold, vice presidents, and Dr. Frederick G. Speidel, treasurer. Dr. Orville R. Miller is secretary, having been elected for two years in December, 1923.

MAINE

Dental Clinic.—Through the cooperation of various municipal and charitable agencies, a new dental clinic has been opened at Rockland. The city provided the plumbing and lighting; the Community Chest, the equipment; the Red Cross, a nurse, and ten dentists have volunteered their services one afternoon a week. It has been arranged in a school room provided by the city. Children whose parents are unable to pay private dentists will pay 25 cents a visit. Educational work will be conducted in all the school grades, and dentistry practiced in only the first three and the kindergarten.

MARYLAND

Quartz Window Installed.—Johns Hopkins Hospital, Baltimore, recently installed a quartz window in the pediatric clinic, to be used in the treatment of children who have tuberculosis and rickets. It is said that quartz does not filter out the rays of light which heal; ordinary glass windows do.

Society News.—A joint meeting of the Section on Ophthalmology and the Section on Oto-Laryngology of the Baltimore City Medical Society was held, January 22, in Osler Hall, Medical and Chirurgical Faculty Building. Dr. George W. MacKenzie, Philadelphia, spoke on "The Diagnosis of Lesions of the Auditory Nerve"; Dr. Hulner Maxwell Langdon, Philadelphia, on "The Ocular Complications of Chorea," and Dr. Jonas S. Friedenwald, on "An Unusual Case of Homonymous Hemianopia Resulting from General Anesthesia."

MASSACHUSETTS

Propose Investigation of Price of Medical Liquor.—A bill was filed in the house recently which would require the Commission on the Necessaries of Life to conduct an investigation to ascertain if exorbitant prices are being charged for medical liquor in the state, and whether there is a state agency that could dispense such liquor.

MICHIGAN

Personal.—Dr. Irvine McQuarrie has resigned his position in the department of pediatrics, Yale University School of Medicine, to become chief of the newly organized pediatric service at the Henry Ford Hospital, Detroit.

Public Health Department.—The *Journal of the Michigan State Medical Society* instituted with the January number a public health department. Material will be supplied by the state commissioner of health and designated members of his staff.

MINNESOTA

Medical Broadcasting.—Under the auspices of the Hennepin, Olmstead and Ramsey County medical societies, an address is broadcast by station WCCO each Thursday evening at 7:45 by a physician. The program for the first three months, which began Dec. 18, 1924, has been outlined, and will be given by members of the Olmstead and Ramsey County societies.

Council Meeting.—The council of the Minnesota State Medical Association met, Dec. 19, 1924, and settled, among other things, the date for the next annual meeting of the association in Minneapolis as April 27-29. Dr. Edward A. Meyerding, St. Paul, was appointed secretary of the association, it having been considered best to have but one secretary, instead of dividing the office into a general and executive secretaryship as heretofore.

Hospital Investigation.—The *Journal Lancet* says that the accumulation of comment in Minneapolis on hospital matters during the last few years has resulted in an effort now to settle the hospital situation in that city through a council which represents the various hospitals. The mayor has appointed a committee to investigate the situation at the General Hospital, which is much overcrowded, due at present largely to the prevalence of smallpox. There are no vacant beds to be had in this hospital either for new cases of smallpox or other cases. At a joint meeting of the mayor's committee and the council of hospitals to discuss common problems, the latter decided tentatively to relieve the congestion of the General Hospital by admitting to other hospitals a certain number of people who are unable to pay or are only able to pay a sum estimated by the General Hospital as the cost of bed patients. The mayor's committee is composed of business men, two physicians from the Hennepin County Medical Society and a club woman.

MISSOURI

Personal.—Dr. Cortez F. Enloe, Jefferson City, for about three years secretary of the state board of health, has resigned to become head of the state board of penal institutions.—— Dr. Horace A. Lowe, Springfield, has been elected county health officer for a period of two years.

Medical Society to Build New.—In view of several large donations, the last one being $10,000 by Dr. and Mrs. Frederick E. Woodruff, it was announced, January 13, that the St. Louis Medical Society will begin the construction of its new building at once. The project, when completed on Lindell Boulevard just west of Moolah Temple, will involve an expenditure of about $300,000. The library portion will be constructed first, and the remainder of the structure will be erected when additional funds are subscribed.

Department of Radiology.—The St. Louis City Hospital has enlarged its department of radiology by the construction of a separate three story building, known as the Radiology Building, at an expenditure of about $100,000. It has nine roentgen-ray units in use and 545 milligrams of radium. It is equipped to do diagnostic and therapeutic work, having many special features, for example, a fracture table which will permit the reduction of fractures by extension apparatus under direct fluoroscopic vision. There are twenty-two rooms in this department and a personnel of sixteen. Technicians are on duty day and night so that emergency cases can be examined at any time.

Proposed Amendments to Medical Practice Act.—The executive committee of the Missouri State Medical Association has referred proposed amendments to the medical practice act to the committee on health and public instruction for introduction into the legislature. The amendments would require that every applicant for a license to practice medicine show evidence of having attended four terms of nine months each and of having received a diploma from a reputable medical college; that an applicant for license attain a grade of at least 70 per cent. on each subject of the examination; that the state board of health accept the certificate of the National Board of Medical Examiners in lieu of its own examination from applicants for license and establish reciprocity with other states, and that violation of the medical practice act be made a felony instead of a misdemeanor, with a maximum penalty of two years in the penitentiary.

NEBRASKA

Chiropractor Factions Fight.—The announcement that a chiropractic bill would be introduced in the legislature, January 16, which would require chiropractors to complete three terms of eight months each in a "reputable school of chiropractic," renewed the factional fight among these cultists, in which the last engagement occurred two years ago during the legislative session. The announcement came from the anti-Palmer faction, it is reported, and is an attempt to reinstate the chiropractic law as it used to be. The Palmer faction succeeded at the last session in having requirements removed, so that all the present law requires is that applicants for admission to practice should graduate from a "reputable school."

NEVADA

Society News.—The Washoe County Medical Society, Reno, Dec. 9, 1924, elected Dr. Vinton A. Muller, president; Dr. Claude E. Piersall, vice president, and Dr. Henry Albert, secretary-treasurer.

NEW JERSEY

Society News.—Dr. Joseph C. Lovett, medical director, Camden Municipal Hospital, addressed the Camden County Medical Society, Dec. 9, 1924, on "The Dick Test for Scarlet Fever," and Dr. Arthur L. Stone, director of health of Cam-

den, on "The Recent Smallpox Epidemic."——Dr. Lucius F. Donohoe, acting president of the Medical Society of New Jersey, addressed the Mercer County Medical Society, Trenton, Dec. 10, 1924; Dr. John Bennett Morrison, secretary of the state society, was another speaker. The following officers were elected: Dr. Daniel Leo Haggerty, president; Dr. John B. Comfort, vice president; Dr. Alfred Dunbar Hutchinson, secretary, and Dr. Harry R. North, treasurer.——Dr. James F. Grattan, New York, addressed the Passaic County Medical Society, Passaic, Dec. 11, 1924, on "Plastic Surgery of the Face."——Drs. Lucius F. Donohoe and John Bennett Morrison, acting president and secretary, respectively, of the Medical Society of New Jersey, and Dr. Henry O. Reik, editor of the journal of the state society, addressed the Somerset County Medical Society, Somerville, Dec. 11, 1924.——Dr. Frank C. Hammond, dean, Medical Department of Temple University, Philadelphia, addressed the Cumberland County Medical Society, January 6, on the use of radium in the treatment of diseases of women.

NEW YORK

Annual Banquet.—At the twentieth annual banquet of the St. Lawrence County Society, to be held in New York, February 19, at the Hotel Astor, Dr. Grant C. Madill, Ogdensburg, formerly president of the Medical Society of the State of New York, will be the guest of honor. Among the speakers will be Dr. George D. Stewart, president, New York Academy of Medicine, Hon. George W. Sisson and Rev. S. Parkes Cadman. Arrangements may be made through the office of the president, Dr. David E. Hoag, 15 East Forty-Eighth Street, New York.

Smallpox in New York.—According to the state department of health, from January 5 to January 10, the following cases of smallpox were reported: Johnstown, five; Town of Covert, Seneca County, four; Amsterdam and the Town of Hope, two each; Buffalo and Yonkers, one each. Eleven of these patients had never been vaccinated, one was vaccinated twenty-four years ago and another eighteen years ago. During the first week of January, thirteen cases of smallpox were reported from South Corning. The source of the latter epidemic has been traced to a negro who came from Youngstown, Ohio. Seven cases of smallpox occurred in the family which he was visiting; these were all treated as chickenpox and were not reported. The recovered cases were diagnosed by the typically distributed pox marks.

New York City

Art Exhibit for Hospital.—The National Association of Portrait Painters held its twelfth annual exhibition, January 15-31, at the Duveen Galleries, 740 Fifth Avenue. The profits of the exhibition go to the Fifth Avenue Hospital.

Leprosy Suspect.—Lillian Baird, 323 Stockton Street, Brooklyn, has been taken to Riverside Hospital on North Brothers Island for observation. Physicians of the health department have diagnosed her condition as leprosy.

Sell Hospital to Pay Damages.—It has been announced that the East New York Hospital will be sold at auction in order to recover $15,095, the amount of an unpaid judgment obtained by Mrs. Annie Berzin, who was injured in a collision of a hospital ambulance and the automobile in which she was riding, July 12, 1924.

Annual Dinner of World War Physicians.—At the Yale Club, January 20, Caduceus Post No. 818, American Legion, which includes about 500 physicians in and near New York, held its annual dinner, at which, among other speakers, were Major General Charles P. Summerall, Admiral Bradley A. Fiske, Col. Charles R. Reynolds and Hon. Ogden L. Mills.

Society News.—At a meeting of the Alumni Association of the Italian Hospital, January 20, Dr. George L. Wurtzel spoke on "Infections of the Hand" and Dr. Sebastian Saladino on "Appendicitis."——Dr. Roger H. Dennett, director and professor, department of pediatrics, New York Post-Graduate Medical School and Hospital, addressed the Flatbush Medical Society, January 17, on "Upper Respiratory Infections in Children."

Typhoid Epidemic Passed.—The city health commissioner has announced that the typhoid epidemic in this city has passed, only three new cases having been reported, January 21, which is below the normal average of other years. The health commissioner said before the legislative committee, which is investigating the pollution of New York waters, that the cause of the major portion of the typhoid fever cases was shellfish; also that the order forbidding the bringing of oysters and other shellfish from nearby beds into the city will still be enforced until further investigation is made.

Funds for Research.—The New York Homeopathic Medical College and Flower Hospital recently gave a dinner at the Hotel Pennsylvania for more than 200 physicians and surgeons of New York, Connecticut, New Jersey and Eastern Pennsylvania, in the interest of the $1,000,000 endowment fund which is being raised by the college for drug research. The endowment committee announced that nearly $800,000 had been raised. Among the speakers were Dr. Gilbert Fitzpatrick, Chicago, and Dr. George W. Roberts, New York. Dr. William H. Dieffenbach, a trustee of the college, presided.

Presbyterian Hospital Sells Property.—The block bounded by Park and Madison avenues and Seventy-First Street, on which the Presbyterian Hospital is located, was sold to a company which proposes to replace the hospital building by a modern apartment house. The company purchased also the Presbyterian Hospital Nurses' Home on the north side of Seventy-First Street. The amount of money to be paid was not announced, but it is said to involve between $5,000,000 and $7,000,000. The Presbyterian Hospital is to have the use of the property for the next four years, by which time the new hospital to be erected at Broadway and One Hundred and Sixty-Eighth Street will be completed.

Health Work in the Schools.—The progress in health work in the New York schools during 1923 is the subject of a special report, just published, which states that between 98 and 99 per cent. of children in the public and parochial schools have been vaccinated against smallpox. During 1923, new classes in sight conservation, open air and cardiac work, demonstrated their value in raising the standard of health among school children. Neighborhood surveys have been made by physicians and nurses to find children for these classes. The report states that practically every tuberculosis contact case among children has been reached by the nurses of the department of health in the effort to place these children in open-air classes. The number of cases of contagious eye diseases has decreased about 25 per cent. within the last three years.

NORTH CAROLINA

Personal.—Grady Morgan, Asheville, has been appointed county health officer for Buncombe County to succeed Dr. Morgan P. Moorer, who resigned on account of ill health.——Dr. Malcolm D. Thompson, Philadelphia, has been appointed a surgical associate on the staff of the Pitt Community Hospital, Greenville. Dr. Thompson is a licentiate of the National Board of Medical Examiners.

Society News.—Dr. Watson S. Rankin, secretary of the state board of health, addressed the Guilford County Medical Society, at the recent annual meeting, Greensboro, on the relations of the profession to public health work.——The twenty-seventh annual meeting of the Tri-State Medical Association (North Carolina, South Carolina and Virginia) will be in Richmond, Va., February 18-19. Dr. James K. Hall, Richmond, is secretary.

NORTH DAKOTA

Licenses Revoked.—It is reported that the license of Dr. William R. Shortridge, Flasher, who was convicted of second degree murder in connection with the death of Freda Nadler, Bismarck, was revoked at the semi-annual meeting of the state board of medical examiners at Grand Forks, January 12. Dr. Shortridge is now under bond pending an appeal. The board also revoked the license of Dr. Patrick E. Shortt, formerly of Bismarck, St. Thomas, Adams and Park River.

OHIO

Smallpox. — The Mahoning County Board of Health announced, January 6, that twenty-four cases of smallpox have been reported from Boardman township.

Chiropractic Bills Before Legislature.—Senator Lauby of Akron introduced a bill, January 13, in the senate, which would remove chiropractic practitioners from the control of the state medical board, a similar bill having been recently introduced in the house. About the same time, the senate defeated a resolution by Mr. Lauby to appoint a committee of five senators and five representatives to make an investigation of chiropractic and report their recommendations for legislation.

Hospital News.—At the annual staff meeting of the Children's Hospital, Akron, recently, Dr. Simon Morgenroth was

elected chief of staff; Dr. Urban D. Seidel, assistant chief; Dr. Alexander S. McCormick, secretary, and Dr. Edmund A. Weeks, a member of the executive committee.——At the annual staff meeting of St. Rita's Hospital, Lima, Dr. William H. Parent was elected president; Drs. Thomas R. Thomas and Edward H. Hedges, vice presidents, and Dr. Virgil H. Hay, secretary-treasurer.

OKLAHOMA

Society News.—At the annual election of the Stephens County Medical Society, Duncan, Dec. 30, 1924, Dr. Wallis S. Ivy was elected president; Dr. Berry H. Burnett, vice president, and Dr. Julius W. Nieweg, secretary-treasurer.——At the annual meeting of the Muskogee County Medical Society, Muskogee, Dec. 8, 1924, Dr. James T. Nichols was elected president; Dr. Howell A. Scott, vice president, and Dr. Arthur L. Stocks was reelected secretary-treasurer.

Administration of Compensation Act.—The Oklahoma State Hospital Association passed a resolution, Dec. 9, 1924, stating that the workmen's compensation act as it is being administered in the state is unjust to the hospitals. Claims made for industrial hospitalization are greatly delayed by the commission, and when disposed of, are inadequately compensated. Enforcement of the award when made is often neglected by the commission, it is said. The resolution called the attention of the governor to a statute which provides that he may remove any commissioner for inefficiency, neglect of duty or misconduct in office, and requests him to consider the exercise of that authority with a view to establishing a more efficient commission. The association resolved also that the governor present to the legislature a recommendation for an investigation of the administration of the state industrial commission and of the insurance department of the state with a view to changes which will place the work of the commission under the direction of a chairman designated by the governor, who shall possess qualifications equal to those required by law of a district judge.

OREGON

Society News.—Dr. Frank Smithies, professor of medicine, University of Illinois College of Medicine, Chicago, delivered the Joyce Foundation lectures at the Portland Academy of Medicine, January 6-7, on "The Relationship of Infection to Pernicious Anemia, with Consideration of Its Significance in Treatment," and "The Newer Conception of Peptic Ulcer with Report of the Results of Treatment by the 'Physiologic Rest' Method."

PENNSYLVANIA

Society News.—At the annual meeting of the Dauphin County Medical Society, Harrisburg Academy of Medicine, January 6, Dr. George B. Kunkel was elected president; Dr. Frank F. D. Reckord, vice president, and Dr. William S. Russell, secretary-treasurer. Dr. George L. Laverty, the retiring president, addressed the society on "Organized Medicine and Its Obligations to the Community."

Philadelphia

Fire at Medical School.—Six laboratories and a research room in the Medical School of the University of Pennsylvania, Thirty-Sixth Street near Pine, were swept by fire at 6:15 a. m., January 24. The loss was estimated at $25,000.

TENNESSEE

Smallpox in Tipton County.—The county health physician, Dr. G. B. Gillespie, estimated, it is reported, January 8, that there were seventy-five cases of mild smallpox in Tipton County.

Health Unit Approved.—The city commission of Jackson has voted $10,000 as its share toward the establishment of a health unit, which project the board of supervisors recently approved. The county will appropriate a similar sum, it is reported, and $8,000 additional for maintenance. The state will appropriate $5,000 toward this health unit.

UTAH

Society News.—The Salt Lake County Medical Society, Salt Lake City, Dec. 8, 1924, elected Dr. John Z. Brown, president; Dr. Franklin H. Raley, vice president; Dr. Maurice M. Critchlow, secretary, and Dr. Joseph E. Jack, treasurer. The society considered various propositions in connection with the erection of a physicians and dentists' building.

VIRGINIA

Dr. Levy Accepts Professorship.—Dr. Ernest C. Levy, for many years chief health officer of Richmond, and for more than five years director of public welfare, has accepted the professorship in preventive medicine at the Medical College of Virginia, Richmond.

WASHINGTON

Drugless Healers Exposed.—In the last eighteen months, about 100 investigations and scores of arrests have been made in this state in a campaign to clear the medical atmosphere. The charges filed from the attorney general's office are directed specifically against the American University of Sanipractic in Seattle. The *Public Health League Messenger* says, it appears that John E. Lydon, president of this institution, solicited students at various prices, made promises as to obtaining licenses to practice from the board, and sold diplomas at prices ranging from $3.75 to $500. In some such way, it is said, hundreds of "graduates" were permitted to appear at Olympia for examination before the regular drugless healers board; and, it is estimated, that three fourths of those practicing drugless healing in Washington were graduates of this "university." Many of these admit, it is reported, that they never really took a course of study in healing. The state's case, which seeks to dissolve this mill, will probably come to trial this month.

WEST VIRGINIA

Dr. Schwinn Honored.—At an informal celebration of the seventieth birthday of Dr. Jacob Schwinn, for many years a practitioner in Wheeling, his fellow practitioners presented him with an elaborate radio receiving set.

CANADA

"Free Clinics" Disapproved.—The *Canadian Medical Association Journal* notes that the question of the revival of "free clinics" in connection with Calgary's school board was an issue of prime importance in the recent civic elections, and it was decisively decided by returning to office the majority of the candidates who were opposed to the renewal of this measure.

Personal.—Dr. John G. McDougall and Dr. Edward V. Hogan, Halifax, have been appointed on the medical council of Canada to represent the medical profession of Nova Scotia, and Dr. John Stewart, of the medical faculty of Dalhousie University, has been appointed to represent the university on the council.——Dr. Charles F. Martin, Quebec, has been elected president of the Canadian National Mental Hygiene Association.

Society News.—The Pictou County branch of the Medical Society of Nova Scotia celebrated its sixtieth anniversary recently by tendering a dinner to one of its first secretaries, Dr. John Stewart. Dr. John W. McKay read an illuminated address signed by all of the members of the society in testimony of their regard for Dr. Stewart.——At a meeting of the National Committee for Mental Hygiene, Quebec, which was presided over by Lady Byng, it was decided to expend $150,000 on research work in mental hygiene.

Fund for Social Hygiene.—The Metropolitan Life Insurance Company, New York, recently made a grant of $15,000 to the Canadian Social Hygienic Council, Toronto, for the purpose of extending its educational work in Canada. The council will send organizers at once to the eastern and western provinces of Canada to stimulate the work of its fifty branches in order to reach the rural as well as urban communities, and an educational scheme for the young, acceptable to all parts of the dominion, will be worked out. Dr. Leon A. Pequegnat, a graduate of Toronto University and a doctor of public health, will be the organizer for the eastern provinces.

GENERAL

American Legion Endowment Fund.—There is being organized a committee which will inaugurate a campaign shortly throughout the country to establish a $5,000,000 fund to care for the orphans of veterans of the World War. The President heads the committee.

Hospital May Dismiss Physician Without Hearing.—A physician having been dismissed from the staff of a hospital in New York, instituted litigation. The court held that while the hospital would not be compelled to reinstate the physician,

it would be required to permit him to treat patients as long as he lived up to its regulations. This decision, on appeal, was reversed by the appellate court, and all of the conclusions of law in the earlier decision were disapproved.

Winners of Contest.—The dean of the graduate college and educational director of the hospital college of Marquette University, Milwaukee, Mr. Edward A. Fitzpatrick, received first prize in *Modern Hospital's* essay contest; the assistant superintendent, Barnes Hospital, St. Louis, Dr. Lucius R. Wilson, second prize; and the superintendent, City Hospital, Providence, R. I., Dr. D. L. Richardson, third prize; the awards being $350, $150 and $100, respectively. The subject of these essays was "The Interrelationships of Hospital and Community."

The Present Pandemic of Plague.—More than a quarter of a million cases of human plague were reported from all countries last year, according to *Public Health Reports*, and many times in recent years plague infection has been reported on vessels in almost every part of the world. The present pandemic began in China in 1894; in 1896, India, Japan, Asiatic Turkey and European Russia were infected; in 1898, Madagascar; in 1899, Arabia, Persia, Egypt, Portugal, Austria, British South Africa and other places. About that time, plague appeared in Argentine, Brazil, Paraguay and the Hawaiian Islands, and in 1900 appeared for the first time in the United States. The list of countries in which plague appeared in 1924 is large. *Public Health Reports* say it seems likely that practically all seaports may sooner or later have to be regarded as actually or potentially infected with plague.

Friends of Medical Progress.—This organization, incorporated in Boston in 1923 for the purpose of disseminating medical knowledge among the general public, has moved its headquarters to 370 Seventh Avenue, New York, where cooperation with important educational and health organizations will be facilitated. The society will hereafter be called the American Association for Medical Progress, and Mr. Benjamin C. Gruenberg will take over the active management of the organization. A lecture program will be developed and attention focused on the formation of branch organizations throughout the country. In the last year, about 72,000 publications dealing with phases of animal experimentation, vaccination and other medical topics have been distributed.

Resolution of American Electrotherapeutic Association.—This association recently adopted a resolution which is, in part, as follows:

> WHEREAS, There is evidence that many persons, neither legally nor technically qualified, are resorting to publicity to attract for treatment by physical measures, people suffering from various ailments; therefore be it
>
> RESOLVED, That it is the concensus of opinion of the members of this Association that it is inimical to the best interests of the public, and detrimental to the cause and progress of the scientific application of these vitally important physical agents in the treatment of disease, that any should be taught in this subject or permitted to practice it except those who are duly graduated and licensed physicians, and persons meeting proper and accepted standards of qualifications such, for example, as those of the United States government hospitals, and working under medical supervision; furthermore be it
>
> RESOLVED, That the American Electrotherapeutic Association recognizes it as unethical for fellows of the association to give courses of instruction in electrotherapy or other branches of physiotherapy, in massage schools or so-called physiotherapy schools not under the control of a duly qualified medical institution, or in any commercial institution which gives courses for a fee.

Workmen's Compensation Laws.—The National Industrial Conference Board, 247 Park Avenue, New York, reports that the Conference Board of Physicians in Industry has suggested methods of harmonizing the workmen's compensation laws, which now differ in important details in various states. Among other things, the Board of Physicians suggests that at least one member of each state compensation board should be a physician who should also be the medical director of the board; that only licensed graduates of recognized medical schools should be permitted to treat compensation cases; that medical fees should conform to the average charges for like work in the community; that copies of the findings of examining physicians should be given to all interested parties, and that reports and testimony of other physicians should not be allowed before the board till medical representatives of the other party have knowledge of the information to be given. Claims that hernia has been caused by employment must be made within twenty-four hours of its alleged occurrence and be supported by proof of certain specified conditions. These suggestions are not new. Every one of the seventeen may be found in the compensation laws of some state, but the board believes that their inclusion in all the state laws would obviate much confusion now experienced in the administration of these laws.

Long Light Waves Are Bactericidal.—A study of the bactericidal action of ultraviolet rays has been made by the Bureau of Standards, Department of Commerce, covering a range of wave lengths from just beyond the limit of the visible spectrum down to the shortest wave lengths emitted by a mercury vapor arc in a quartz lamp. The shortest waves, when sufficiently intense, were found to produce death with an exposure of only one second. Longer wave lengths required a greater intensity and acted much more slowly; but a killing action was found to result even from waves as long as 365 millionths of a millimeter, which is almost as long as the shortest waves visible to the human eye. Prior to this experiment, doubt had been expressed regarding the ability of these longer waves to kill bacteria. *Bacillus coli-communis* was used in the tests. The bacilli were put in a large volume of water, some of which was sprayed on Petri dishes. A quartz mercury vapor lamp was used as the source of ultraviolet rays, screens being interposed to cut off successive spectral ranges of the wave lengths. Rays of sufficient intensity killed bacteria with an exposure of less than one second, using a 320 watt mercury lamp, at a distance of 6 inches. When the intensity was very low, the killing action was retarded. In some experiments an exposure of seventy-five to eighty seconds was required. On still lower intensities there was some indication that the bacteria were stimulated instead of being killed. In tests made to compare the relative value of continuous and intermittent exposures, it was found that the killing effect was in proportion to the total exposure, whether this was given all at once or divided into several short exposures with periods of rest between.

Society News.—The next annual meeting of the National Association for the Study of Epilepsy will be at the Jefferson Hotel, Richmond, Va., May 11-12.——The next annual meeting of the Association of Military Surgeons in the United States will be in New York City. The date has not been fixed but it will presumably be in October.——Preparations have been under way for some time by physicians of Washington, D. C., for the annual convention of the American Congress of Internal Medicine, to be held in that city in May. The local organization plans include the active participation in the convention of every physician in the city. Dr. William G. Morgan, president of the congress, announced the membership of committees several weeks ago.—At the annual meeting of the Tri-State Medical Association (Louisiana, Arkansas and Texas), Shreveport, La., January 15, Dr. John A. Hendrick, Shreveport, was elected president; Drs. Clifford H. Irion, Benton, La., Charles F. Carter, Dallas, Texas, and Reuben Y. Phillips, Malvern, Ark., vice presidents; and Dr. Frank H. Walke, Shreveport, secretary-treasurer (reelected for the ninth consecutive time). The next meeting will be at Marshall, Texas, the date to be announced later.——The Society of American Bacteriologists, Washington, D. C., Dec. 29, 1924, elected Dr. Norman M. Harris, Ottawa, Canada, president; Dr. Hans Zinsser, Harvard University Medical School, Boston, vice president, and James M. Sherman, Cornell University, Ithaca, N. Y., secretary-treasurer.——At the thirty-seventh annual meeting of the American Physiological Society, Dec. 29-31, 1924, Washington, D. C., Dr. William H. Howell, Baltimore, was reelected editor of *Physiological Reviews*, and Dr. Donald R. Hooker, Baltimore, was continued as managing editor of this publication and the *American Journal of Physiology*, the two journals published by this society. The William T. Porter Fellowship in Physiology was continued, and the present holder is Howard H. Beard, who has elected to work in metabolism under the direction of LaFayette B. Mendel, Yale University. Since there is no possibility of the International Physiological Congress meeting in this country before 1929, a committee was appointed to see if arrangements could be made for that year.

LATIN AMERICA

Hospital News.—The government of Bolivia has appropriated 551,163 bolivianos for the construction of a hospital in the city of Potosi, which it is expected will be completed on the occasion of the Independence Centennial next year.——The Vincente D'Antoni Hospital in La Ceiba, Honduras, was built and donated by Viccaro Bros. & Company, who, to maintain the hospital, will donate 50 per cent. of their dock receipts, the government providing certain other funds. The institution provides general hospital service and is designed for the free treatment of the poor regardless of race, nationality or religion.

FOREIGN

Proposed Medical School for Women.—Dr. Susumu Nukata plans to establish a medical college for women in the suburbs of Tokyo. The school will have a capacity of about 700 students, says the *Japan Medical World*, and will be opened this spring.

Danish Association Drops Member.—Dr. J. M. B. Schilder, Copenhagen, has been dropped from the Danish Medical Association on account of his professional alliance with a chiropractor. The *Ugeskrift for Lager* publishes the report presented by the investigating committee.

School of Hygiene for Jugoslavia.—The Rockefeller Foundation has given about $200,000 to Jugoslavia for the construction of a school of hygiene at Zagreb; $40,000 for the improvement of sanitary institutions in Belgrade, and $15,000 to aid needy students abroad who pledge their services after graduation to the public health service in Jugoslavia.

King Edward Hospital Fund.—At a meeting of the Council of the King Edward Hospital Fund, London, England, Dec. 18, 1924, the Prince of Wales announced that the total distribution of the fund for 1924 amounted to £316,000, and that it had been decided to extend the area of the fund from a radius of 9 miles around Charing Cross to a radius of 11 miles around St. Paul's in order to bring in more of the eastern districts.

Russian Medical Congress.—At the medical congress in Leningrad, Russia, May 23-27, the results of investigations in physical therapy, which have been conducted since the World War, will be presented. Prof. A. S. Brustein will discuss "Heliotherapy"; Prof. S. B. Vermel, "Ionotherapy"; Prof. A. L. Polianov, "Physiotherapy for Arthropathies," and Prof. L. G. Mezernitzky, "Physiotherapy in Disturbances of the Internal Secretions." A cordial invitation is extended to American physicians. Professor Brustein, 5aia Sovetskaia, 4, Leningrad, is chairman of the committee in charge.

Personal.—Osmund Cattlin, borough engineer, Lambeth, has been elected president of the Institution of Sanitary Engineers, England.——The Italian Associazione per l'igiene is planning to present a gold medal to Dr. A. Sclavo, professor of hygiene at Florence, on the occasion of its annual meeting, in tribute to his services to the cause of hygiene in Italy.——Dr. Marius Tscherning retires from the chair of ophthalmology, Copenhagen, having reached the age limit. His photometric glass is a quite recent discovery.——Dr. Fidel Fernández, Granada, has been awarded a prize by the Academy of Medicine at Bilbao for his book on the pathology of the liver, "Los Grandes Sindromes Hepatobiliares."——Dr. A. Følling has been awarded a grant to enable him to continue his research at Christiania on the lipoids of the blood, especially in anemia.——Dr. E. van Dieren, Amsterdam, was recently presented with his portrait by a committee of fellow citizens, in honor of his fortieth year of medical practice.——Dr. Peset, the dean of the medical school of Valencia, was presented with a souvenir volume containing his own inaugural address at the opening of the current academic year. Four special copies were presented to the national and the Valencia libraries and 2,500 copies are to be distributed among physicians.

Deaths in Other Countries

As THE JOURNAL goes to press, the cables announce the death of **Sir James Mackenzie**, widely known for studies on diseases of the heart, aged 71. Dr. Mackenzie held various positions of honor in medical schools, hospitals and scientific societies.—— Dr. **Guido Banti**, professor of pathologic anatomy at Florence.——Dr. **M. Carlier**, chief of the maternity service of the public hospitals at Brussels, vice president of the Belgian Société de gynécologie et d'obstétrique, aged 45.——Dr. **J. Crocq**, professor of psychiatry at Ghent, aged 57.——Dr. **P. Benedit**, emeritus professor of genito-urinary disease at the University of Buenos Aires.——**B. R. G. Russell**, assistant, Imperial Cancer Research Fund; specialist in research of malignant diseases; Dec. 22, 1924.

CORRECTION

Smallpox in Philadelphia.—THE JOURNAL noted, January 17, p. 212, that there were thirty-two cases of smallpox in Philadelphia, Jan. 3, 1925. This should have read that the total number of cases in that city during the year 1924 was thirty-three.

Government Services

Amazing Decision of the Comptroller General

The certificate of a Christian science practitioner as to the illness of a government employee is held sufficient for a consular officer or clerk to secure sick leave, although the State Department regulations require that "a certificate of the physician in attendance" must be furnished. The foregoing is a summary of a decision made by United States Comptroller General McCarl at Washington, which will be received with amazement by the legal profession and bring dismay to the medical profession. The decision is made in answer to a request from the Secretary of State for an interpretation of the Consular Regulations, which are based on federal statutes and additional rules thereto made by the State Department. This particular regulation relates to the necessary permission to be secured from the Secretary of State to grant leave of absence to consuls or other employees in cases in which the health of such a person requires that he be absent from his post of duty for a period of sixty days.

Section 1742 of the U. S. Revised Statutes provides that:

> No diplomatic or consular officer shall receive salary for the time during which he may be absent from his post . . . beyond the term of sixty days in any one year.

The Consular Regulations, based on such statute require that:

> Whenever leave of absence is claimed to be necessary on account of illness, it is desirable that a certificate of the physician in attendance be forwarded to the Secretary of State.

In rendering his decision, Comptroller General McCarl states that:

> A requirement that the illness of an officer or employee of the United States be evidenced by a certificate of a physician does not necessarily limit certification thereto by physicians of any particular school. Recognized practitioners of whatever school may be accepted, and no good reason suggests itself why a certificate by a recognized Christian science practitioner should not be accepted.

In another part of this decision by Comptroller McCarl, is found the following:

> I am not aware of any reason why a statement by a believer in Christian science, whether a practitioner or not, should be accepted in preference to similar statements of persons of a different faith.

This is perhaps the first decision ever made by federal government legal authority in which so broad an interpretation has been placed on a statute and departmental regulation which has the result of giving Christian science practitioners the status of physicians.

Bill to Reorganize the Executive Departments

Following a conference with President Coolidge, Senator Reed Smoot of Utah has made the announcement that the pending legislation to reorganize the executive departments of the government will be pressed for passage at the present session of Congress. The bill was originally introduced by Senator Smoot in June, 1924, and provides for the establishment of a Department of Education and Relief, in which Department will be included the United States Veterans' Bureau, the Public Health Service, the Columbian Institution for the Deaf, St. Elizabeth's Hospital, the Bureau of Pensions, and the Commission of Education. Persistent opposition to this legislation has been made, particularly by the Bureau of Education, the Vocational Board and other units proposed to be transferred to the new department. Senator Smoot indicates, however, that the opposition is not of a serious character because it is due to lack of full understanding on the part of those offering objections. Senator Smoot says that the President is eager to have this legislation passed at the present session, and he assured the President that he will do everything in his power to make this possible. An effort is being made in the House of Representatives to advance this measure. It was favorably reported by Congressman Mapes at the last session, and that congressman, January 7, submitted a resolution to the house asking for a special rule permitting the measure to come before that body for debate and final disposition. The Committee on Rules has not as yet taken action on this legislation.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan. 17, 1925.

National Health Insurance

The national health insurance scheme is once more to be placed in the melting pot. A royal commission has been appointed to inquire into its working. The British Medical Association has therefore prepared in advance a draft memorandum of evidence, which it intends to place before the commission. The important fact is first emphasized that the organization of a national health insurance scheme is not necessarily, or even probably, the best means of utilizing limited resources for the promotion of national health. It is more than likely that there are a number of other directions in which, severally or collectively, a corresponding expenditure would produce an even more satisfactory return. Such are: (1) proper housing; (2) town planning, with the proper provision of open spaces and recreation facilities; (3) smoke abatement; (4) a pure milk supply; (5) public house reform and the regulation of the sale of alcoholic beverages; (6) the destruction of vermin; (7) education, and (8) the aiding of medical research. If, however, resources are sufficient, or if for other reasons it is deemed desirable to organize a national health insurance scheme, regard should be had primarily and constantly to the maintenance of health and the prevention of disease, and not merely to provision for the alleviation or cure of morbid conditions. To this end, not only should the attention of all physicians be directed continually to prevention, but the existing machinery and health officers should be linked up with the insurance scheme.

The system established under the national health insurance acts has been in force since January, 1913. At the beginning, its success was jeopardized by the antagonism of a large proportion of physicians. Then the immense disturbance of the war and of demobilization occurred, and it is only during the last three years that the system can be said to have been working in a really smooth and normal fashion. Indeed, some essential improvements came into force only at the beginning of 1924. Nevertheless, in 1922 both the representative body of the association and the local medical committees declared that "the measure of success which has attended the experiment of providing medical benefit under the national health insurance acts system has been sufficient to justify the profession in uniting to insure the continuance and improvement of an insurance system." Comparison of the conditions of practice among the classes to which insured persons belong, before and since 1913, leaves no doubt that whole classes of persons now receive a real medical attention which they formerly did not receive at all; that the number of physicians in proportion to the population in densely populated areas has increased; that the amount and character of the medical attention is superior to that formerly given even in the best of the old clubs; that illness is now coming under skilled observation and treatment is given at an earlier stage than formerly; and that, speaking generally, the work of physicians has been given a bias toward prevention.

On the other hand, there is at certain seasons, and in times of widespread epidemic disease, an almost unbearable strain on physicians. Moreover, a volume of regulations that must be observed and forms that must be filled out is regarded as oppressive, and actually deters some physicians from taking part in the service at all. The physician is still an individual dealing with an individual patient, and, so far as his mind is diverted from this by concern for other duties and by fear of unwittingly transgressing rules and regulations, this is detrimental to his work. The association holds that in any national health insurance scheme certain broad principles with regard to medical benefits must be regarded as fundamental. The medical provision should be available only for those persons who would be unable to obtain it without the help of the insurance scheme. The provisions made should be, as far as possible, complete. The conditions under which the medical attention is given should approximate as nearly as possible to those of private practice. Medical representatives should be closely associated with the administration of the scheme, and as far as questions of purely professional conduct and treatment are concerned, judgment should be in the hands of purely professional bodies. Remuneration should be on such a basis as would produce an income not less than that which corresponding responsibility and work should produce in comparable private practice, regard being had to all relevant considerations, and would not prejudice the continuous supply of the best type of physician. If these conditions are not secured, there will be grave danger that: (1) the volume of work imposed on the medical profession will be much greater than it can properly perform; (2) much of the advantage of present professional feeling and tradition will be lost and the present relationship of physician and patient be changed for the worse, to the prejudice of the patient, and (3) work under the insurance scheme will be regarded as of only secondary importance when compared with other branches of medical practice. The important question has arisen whether it is not equally necessary to include those dependent on the insured workers (who alone now come under the acts). The association holds that the dependents of the lower paid insured persons should be provided for, but is opposed to the inclusion of the dependents of the whole of the present insured persons. As conditions of this extension, it considers necessary: (1) the establishment or continuance in all populous localities of infant welfare centers: (2) a home nursing service, and (3) reduction to a minimum of all records and reports required from physicians.

The medical provision made for all persons included in the scheme should be, as far as possible, complete. Under the present scheme the medical service provided is, broadly, such as can reasonably be expected from general practitioners. Other services publicly provided under the auspices of local authorities are also available—certain pathologic facilities, treatment for tuberculosis and venereal disease, and for certain infective fevers, the treatment of certain conditions of children of school age, and provision in connection with maternity and infant welfare. Moreover, some lodges make contributions to some of their members toward the cost of a few other treatments: e. g., dental, ophthalmic or institutional. The association holds that all such services and benefits should be made an integral part of the insurance scheme, so that they may be made generally available. They should be extended so as to include complete consultant and specialist advice and treatment, full laboratory facilities for clinical purposes, residential institutional treatment so far as possible with limited accommodation, dental advice and treatment, such ancillary help as can be given by nurses and masseurs, and an ambulance service. The medical personnel of the consultant or specialist service should consist of all registered physicians who are willing to accept service and who satisfy certain criteria as to status. These criteria should be those at present laid down in the medical benefit regulations and elsewhere for a similar purpose. These are that: (*a*) he has held hospital or other appointments affording special opportunities for acquiring special skill and experience of the kind required for the performance of the service rendered, and has had actual recent practice in performing the service rendered or services of a similar character; or (*b*) he has had special academic or postgraduate study of a subject that comprises

the service rendered, and has had actual recent practice as aforesaid; or (c) he is generally recognized by other practitioners in the area as having special proficiency and experience in a subject that comprises the service rendered.

The Nordic Race

The preference shown by the United States government for the peoples of Nordic race, in its restriction of immigration, should render a lecture delivered to the Eugenic Education Society by H. J. Fleure, professor of anthropology in the University of Aberystwith, of especial interest just now. He emphasized the apparently very simple truth that there were many "bests." In any search for the best, one must guard against the desire to simplify matters by placing us all on the same ladder at different levels, or by treating us all as in three groups—subnormal, normal and supernormal. It was wrong to suppose that there was a general factor called "ability," which could express itself in many ways according to opportunity, and that we might test this general ability without close reference to individual aptitude. A good deal of the Nordic race entered into the composition of the English race, and he believed that it was of great value to England; but it was only one of the best types, and was best only in certain circumstances and environments. The creation of the British Empire, based as it was on coal and slums, made it very difficult for the Nordic type to remain and to find the scope that it required. The congestion of the great cities was unfavorable to this type. The complications of social life and modern conditions were altogether hostile to the simple mentality of the race, characteristics of which were expressed in the old mottoes, "Ride well, shoot straight, and speak the truth." The spread of British people over far lands, and the creation of slums—manufacturing towns—in this country had driven this type on to Canada, South Africa, Australia and New Zealand. It was not yet certain that this type could, in the end, survive in many of these lands.

PRAGUE

(From Our Regular Correspondent)

Jan. 6, 1925.

Pregnancy and Tuberculosis

Dec. 15, 1924, the Association of Czech Physicians in Prague held a joint meeting with the Association for the Study of Tuberculosis to formulate a reply to the International Union Against Tuberculosis, which has requested the national societies federated in the union to study the question of pregnancy in tuberculosis. The chief report was presented by Prof. E. Eiselt, who summarized the conflicting literature on the subject and gave his own views. He believes that an abortion should be performed in every case not later than one month after the conception. The prognosis in further advanced pregnancy is always much more serious. Every case should have observation of several weeks in a sanatorium. An artificial pneumothorax might make abortion unnecessary in many cases. In the fibrocaseous pulmonary tuberculosis, an abortion is indicated only when the process is bilateral. Tuberculosis caseosa is an indication for abortion in every case. Tuberculosis abortiva is an indication only when there are repeated hemorrhages and the temperature goes higher than 100.2 F. The opened disseminated forms of tuberculosis are to be classed in the same category. Pleural exudate is not an indication for abortion unless there are bacilli in the sputum. Laryngeal tuberculosis should be an absolute indication for an abortion. The nursing of the child is to be prohibited in most cases of tuberculosis even if an infection of the child could be prevented through a proper technic, because the production of milk strains the vitality of the mother. Following abortion in a tuberculous mother, sanatorium treatment is needed. The gynecologic clinics of the Prague medical school are conservative in their practice, and report encouraging results. Dr. J. Hájek, who presented the medicolegal aspect, recommended that in every case in which an abortion is requested because of tuberculosis the physician should obtain a written certificate from a phthisiologist that the step is indicated by the condition of the patient. Prof. J. Jerie spoke for a conservative attitude in this question; but if an abortion is decided on, the operation should be accompanied by a sterilization. According to his opinion, sterilization by roentgen ray is most suitable, because it is temporary and the woman can become pregnant in case the tuberculosis becomes arrested. A prophylactic temporary sterilization of every tuberculous woman who is likely to become pregnant seems to be a wise procedure. The final formulation of the resolutions was entrusted to the executive committee.

Professor Srdinko's Fiftieth Anniversary

January 1, Prof. Otokar Srdinko celebrated his fiftieth birthday. He is professor of histology and embryology at the Czech Prague medical school, and one of its outstanding figures. Graduated in Prague in 1899, he became assistant of the histologic institute in Prague, and joined the teaching staff of the faculty in 1901. He spent the years 1902-1903 in the laboratories of Prof. Oskar Hertwig in Berlin, and visited many scientific institutions in France, Germany, Italy, Switzerland, Belgium, Holland, England, Russia and Poland. In 1915, he became the head of the histologic department of the Prague Czech medical school, and has continued in this position ever since. In 1918-1919, he was the dean of the school. His scientific studies are chiefly concerned with the study of the suprarenal glands from both the histologic and the embryologic points of view. A further series of papers deals with the histology of cartilage and other tissues. He is the author of textbooks of histology and of embryology. Besides his scientific activities, he has been prominent in politics and is one of the influential members of the chamber of deputies. In this function he is spokesman for the universities in parliament, and the Czechoslovakian universities are indebted to him for many improvements that have been made in their equipment since the creation of the independent state.

Teaching of Preventive Medicine

An institute of social medicine was held, Dec. 1, 1924. The lectures dealt with preventive medicine, and were supplemented by excursions into the different dispensaries, sanatoriums and other social institutions in Prague and its vicinity. Most of the lecturers were experienced in some field of preventive medicine. The program included, on the average, seven hours of theoretical lectures each day, and two hours of practical exercises. The results of the course were very gratifying both to the organizers and to the participants. Forty physicians from all parts of the Czechoslovak Republic were regular members of the institute, while others attended some of the lectures. This institution will be held yearly from now on, either as a voluntary school or as part of the official public health curriculum.

Reduced Budget for Public Health

The budget of the ministry of health and physical education for 1925 has been cut down considerably from that of 1924; that is, to 126 million crowns instead of 159 million crowns. The largest item of the budget, 41 million crowns, is for the state institutions, including the state laboratories and hospitals. The second largest item, 35 million crowns, goes to the salaries of the nationalized health officers. Two big items from the budget of the previous years are missing: appropriations for the nationalization of the hospitals and for state

watering places. The first appropriation has been omitted because the condition of the general hospitals has considerably improved in the last year. The state watering places have been put on a commercial basis, although the state preserves the ownership. The appropriation for combating social diseases was cut down from 11 million to 9 million crowns. The funds for the campaign against infectious diseases also show a decrease of a million to a million and a half crowns. The rest of the items remain practically unchanged, with a possible reduction of about 20 per cent. It is understood that this reduction of the state budget for public health shall not affect the public health activities materially, because public health administration in the state has been conducted very economically since the existence of the independent ministry, and considerable savings were made in the appropriations for health purposes of the previous years.

HOLLAND

(From Our Regular Correspondent)

Jan. 6, 1925.

Decentralisation in Urban Construction

At the twenty-ninth congress of public hygiene, M. Keppler, director of the communal service for architectural construction, outlined the principles that should obtain in the organization of building construction in large centers. The figures that he gives in regard to the distribution of the population are very instructive. The population of Holland, which numbers at present 7,250,000 inhabitants, comprised in 1840 only 2,800,000. The density of population per square kilometer has thus risen in eighty years from 87 to 221. As in other countries, the attraction of the large municipal centers is manifest. In 1840, the percentage of the total population residing in cities of any considerable size was 30 per cent., whereas now it is 46 per cent. Practically every other person is a city dweller. The problem of building construction must be viewed, therefore, from the standpoint of this inevitable and incessant increase in the population. Modern cities resemble, above all, a disordered ant-hill. The downtown section is becoming more and more an exclusive business center, which is inhabited only during the day. In the distribution of homes and residences this fact is not taken adequate account of, for the inhabitants seem to choose their place of residence mainly on the basis of available houses and apartments for rent, and it frequently happens that a person employed in the northern part of the business center resides far to the south, and vice versa, so that every day long distances are traversed unnecessarily, which contributes in the aggregate toward an important augmentation of the difficulties of traffic and the number of accidents. An organization of building construction in cities in accordance with commercial and industrial needs and a preestablished plan would permit a much better coordination of efforts, produce much better results and make for wise economy. From whatever standpoint the matter is viewed—the economic, the social or the hygienic—the author holds that there is urgent need of reforms, for they have an important bearing on the crusades against infectious diseases and, more particularly, tuberculosis, since any improvement in living conditions has a beneficial effect on the incidence of tuberculosis.

The Sturkop Affair

The Sturkop affair arose over the fact that a medical inspector of Amsterdam became the object of an inquiry, instituted because of alleged neglect of duty in his service. A medical commission appointed to take expert testimony confirmed the charge of negligence, and immediately two parties, one for and one against Dr. Sturkop, were formed. The decision of the medicolegal commission was alleged even by adversaries of Dr. Sturkop not to present the impartial aspect of a true legal decision. It is in this connection that the Sturkop affair has become a matter of general interest. One of the most eminent medical authorities in the country, Dr. Burger, has voiced the hope that within the near future a council on ethics for physicians, to which one or more jurists shall be attached, may be created. Most of the French journals are carrying articles on the subject, and the Belgium Academy of Medicine has passed a resolution favoring the establishment of such a body. The medical profession in England and also the medical societies of Berlin admit its necessity. The presence of legal experts on the council would, it is thought, furnish a guarantee that all proceedings would be conducted in accordance with the true principles of jurisprudence; it would also add to the intrinsic value of the decisions rendered by the council.

Vaccination Against Smallpox

Dr. Kapsenberg holds the view that all school teachers who have not been vaccinated against smallpox should be removed, for unvaccinated teachers are more subject to infection than unvaccinated pupils.

Sympathectomy in Exophthalmic Goiter

Before the Netherlandic Surgical Society, Dr. Zaaijer recently presented an interesting communication on the treatment of exophthalmic goiter in which there were pronounced exophthalmos and frank cardiac disorders. Whereas partial thyroidectomy yielded little improvement, cervical sympathectomy brought a frank amelioration of the cardiac and ocular symptoms.

Seventy-Five Years of Service

In commemoration of the seventy-fifth anniversary of the founding of the Nederlandsche Maatschappij tot Bevordering der Geneeskunde, a committee serving under the chairmanship of Dr. H. Burger has edited and will publish a memorial volume which contains the complete history of the society and its journal since their foundation in 1848.

BERLIN

(From Our Regular Correspondent)

Jan. 10, 1925.

Results of the Shortage of Dwellings

A recent number of the *Deutsche medizinische Wochenschrift* contains some startling statements on the increase of acquired venereal diseases in children. The dermatologic department of the Rudolf Virchow Hospital in Berlin, which has only a limited number of beds for children at its disposal, has, for a number of years past, been overcrowded with children in whom infection is, for the most part, the result of bad housing conditions.

Dr. Gumpert, assistant physician, the author of this communication, makes the following proposals as a means of preventing a repetition of such cases:

1. Application of social principles to the housing situation: Overcrowded and insanitary dwellings are one of the main causes contributing to the conditions described. Members of the family and strangers (roomers), adults and children, the sick and the well, are all huddled together like birds in a cage. In Berlin, in 1920, there were 150,000 families whose homes were confined to one room.

2. In the schools, parents should receive periodic instruction from school physicians in regard to the first signs, the results and the significance of venereal diseases.

3. There should be instituted compulsory examination of children by experienced physicians for evidence of venereal disease on admission to the kindergarten, the schools (public and private), homes and institutions, in order that sources

of infection in places where epidemic transmission is most likely to occur may be discovered at once.

4. All persons who, in a professional capacity, have to do with children (wetnurses, children's maids, governesses, house employees, teachers and others) must on request—especially when entering on a new position—present a health certificate from a physician.

5. The parents and schools should have at their service wise medical counselors who could be counted on to aid the, for the most part, unsuspecting and helpless parents and teachers in getting the child safely through the dangerous years of its sexual development, and who would also be in a position to treat those who were mentally or physically disturbed, endangered or who had been actually led astray.

6. A central bureau should undertake the keeping of statistical records of all cases occurring, in order that a concrete survey of the situation might be secured, and a scientific and practical elaboration of all pertinent questions rendered possible.

The Mortality of Physicians in Germany

On the basis of material that was available in the Versicherungskasse für die Aerzte Deutschlands, Karl Freudenberg, medical statistician, has published an article in the *Jahrbücher für Nationalökonomie und Statistik* on the present mortality among German physicians, which is of general interest. In 1835, Professor Casper, a medical statistician, published in his treatise on the same subject the conclusion that physicians were the shortest lived of all the professions and occupations he had investigated. He ascribed this finding to the great demands on physical and mental strength that were associated with the activities of a physician. The method by which Casper reached this conclusion was, however, so lacking in a scientific basis that it carries no conviction. From later researches, which were carried out by two physicians associated with the Gothaer Lebensversicherungsbank and two medical statisticians of Saxony and Wurttemberg, it became evident that in the second half of the nineteenth century the mortality of physicians was somewhat lower than that of the male population as a whole, but considerably higher than that of the other academic professions.

Mortality Statistics

Country and Period	Mortality Rate per Thousand Population: For Entire Male Population from Age 26 On	For Physicians from Age 26 On
Germany, 1871-1881 or 1829-1885	29.20	28.07
Germany, 1920 or 1920-1923	25.19	24.43
England, 1910-1912	25.54	24.59

Freudenberg has used the statistical material that applies to the years 1920-1923. He considered the question from three different angles: (1) a comparison with the general mortality of German men during the same period; (2) a comparison with the mortality of German physicians fifty years ago, and (3) a comparison with the mortality of English physicians during approximately the same period. Of the various tables that he has prepared on the basis of his researches, three are adjoined, which throw especial light on the problem in hand. Among the causes of death, the infectious diseases (especially typhoid, typhus and tuberculosis) claimed many victims among physicians in the second half of the previous century. Among the younger group of physicians, more than 50 per cent. and in the group of middle-aged physicians more than 30 per cent. of all deaths were due to those infectious diseases. As a consequence of the general decrease in the number of epidemics, the mortality of physicians from infectious diseases is much less than formerly. Especially striking is the marked decline in the number of affections of the central nervous system. Because of marriage only comparatively late in life, venereal diseases in members of the academic professions are frequent. The central nervous system in brain workers seems particularly nonresistant to syphilis. In addition, the Jews, whose marked predisposition to general paralysis and tabes is well known, are well represented among German physicians. It is therefore easy to comprehend that affections of the central nervous system formerly played an important part in the mortality of physicians. With the great progress that the prophylaxis and treatment of syphilis have made since the beginning of the twentieth century, the mortality among physicians from this cause has greatly diminished. The number of deaths from pneumonia and pleurisy has also decreased. As regards fatal tumors, no particular change over the past has occurred. Fatal affections of the circulatory organs have acquired greater relative importance than they formerly had. It has been noted that, during the ages from 55 to 65, affections of the circulatory organs are more common among physicians than among the general population. The great demands made on the physical and mental strength of members of the medical profession, during the war and the postwar period, and, in recent years, the economic struggles with the health insurance societies, have doubtless contributed toward a higher mortality among the older age groups. This cause has probably found its expression also in the increase of suicide among physicians. Of the 217 physicians whose records Freudenberg scanned in the elaboration of his statistics, sixteen committed suicide—twelve of these ranging from 46 to 61 years of age—doubtless owing, for the most part, to financial difficulties. In his comparison with the mortality of English physicians, Freudenberg established that among the latter there was less than the average mortality from tuberculosis but much greater than the average mortality from arteriosclerosis, especially in the 55-65 age group. Also among English physicians suicide was much more frequent than among the general population, but the incidence of suicide in England is much lower than in Germany.

Percentage Relation of Mortality Among Physicians to Mortality of Entire Male Population

Age	In Germany, 1829-1885 or 1871-1881	In Germany, 1920 or 1920-1923	In England, 1910-1912
26–35	74.9	67.1	76.0
35–45	92.6	84.4	87.8
45–55	82.3	95.3	94.6
55–65	97.6	113.8	88.1
65–75	94.9	79.9	90.8

Decrease in Germany of Mortality Among Physicians and Among General Population

Age	Percentage of Decrease in Mortality: Among Entire Male Population of Germany from 1871-1881 to 1920	Among German Physicians from 1829-1885 to 1920-1923
26–35	31.1	38.2
35–45	48.4	53.0
45–55	44.9	36.1
55–65	31.7	20.3
65–75	21.3	33.7

Death of Professor Ernst Bumm

Prof. Ernst Bumm, the director of the Universitäts-Frauenklinik in Berlin, died, January 2, in Munich, from gallstone disease. Professor Bumm began his academic career as an assistant to the dermatologist Rienecker in Würzburg. Later he became an assistant of the gynecologist Scanzoni, and then an instructor in gynecology at the University of Würzburg. Soon after he was offered a chair in this subject at the University of Basel, whence he removed later to the University of Halle. In 1904 he was called to the University of Berlin as the successor of Gusserow as

director of the Frauenklinik der Charité. In 1910, after the death of Olshausen, he accepted a similar post as director of the Universitäts-Frauenklinik in the Artilleriestrasse. He was one of the first German professors to be asked to deliver lectures in a foreign university. In Bumm's clinic gynecologists from all parts of the world could be found working and studying. His scientific contributions began with the demonstration of the significance of the gonococcus in gynecology. His interest and understanding for bacteriologic studies were evidenced in recent months by the demonstration of the bacteria concerned in the pathogenesis and treatment of puerperal fever. In recent years, he has devoted himself to the study of irradiation as applied to uterine cancer. While it is true that his first communications on this subject (as was natural in view of his nature, which leaned toward therapeutic optimism) have not been fully confirmed by more recent investigations; yet it must be admitted that his studies were influential in bringing about the adoption of this method of treatment. Among the operative methods in the field of gynecology that he introduced may be mentioned ventrifixation and collifixation. Also blood transfusion was revived, partly as a result of his successful application of the method to gynecologic cases. Bumm was gifted with unusual skill as a technician, which constituted the basis of the accuracy, precision and speed with which he performed his operations. As a teacher, he was very popular with the students, not only by reason of the wealth of his experiences but also on account of the clearness of his lectures. The same qualities characterise his textbook on gynecology, which has been translated into several foreign languages and has passed through numerous editions within a few years. The excellent illustrations, to the number of nearly 600, were made by Bumm, for he also possessed unusual artistic talent.

MADRID

(From Our Regular Correspondent)

Dec. 15, 1924.

Tribute to the Discoverer of the Laryngoscope

The municipal council of Madrid has rendered a tribute to the memory of the inventor of the laryngoscope, Manuel Garcia, unveiling on the anniversary of his birth a tablet on the house where he was born, March 17, 1805. The National Academy of Medicine also took a prominent part in the ceremonies. The municipal council, led by the mayor, went in state to the academy. A special session was devoted there to the professor of music whose method of examination has permitted the development of one of the most scientific branches of medicine. When the session was over, members of the academy and of the municipal council went with all ceremony to Reloj Street, where Garcia's house is located, to unveil the tablet in which appears in high relief the musician's portrait.

In the academy the main address was made by a laryngologist, Dr. A. Garcia Tapia, who explained both the origins of Manuel Garcia and those of his discovery. Garcia's father was the singer Manuel Rodriguez Aguilar, known everywhere under the name of Manuel del Polplo Vicente Garcia, and his mother was a dancer, Joaquina Siches Briones. When Garcia became an orphan, his mother married for the second time, her husband finding a position for the boy in the choir of the Seville cathedral. From this time on, he began to be known as Garcia. His sisters were the singers Viardot and Malibran. On his return from the conquest of Argel, where he went with the French army, he was employed in the Paris hospitals. Here he showed much interest in anatomic studies of the larynx. With his stepfather, who was a professor of singing, he organized an academy. His teaching methods were so original as to win him an appointment on the staff of the Paris conservatory.

Garcia described personally to Dr. Garcia Tapia the origin of his discovery. "I have always thought that every man must know his own business thoroughly. Therefore, I felt the need of a scientific education in my art. As the voice comes from the larynx, it was only natural that I should try to know its anatomy. Therefore, I began to make dissections in dogs with the cooperation of Dr. Segond (Jr.). Afterward, I studied anatomy in man, using dead bodies. Thus, I was able to see the peculiar arrangement of the internal thyro-arytenoid muscle. I became convinced that neither sections nor vivisection could solve all questions related to the secret of voice formation unless I could directly observe the glottis in actual function. The idea of seeing my own larynx obsessed me. As I knew the depth and inaccessibility of the larynx, I despaired. Many times I discarded my idea, but it always came back. I was then reading a philosopher, I think Bacon, and was impressed with his saying that all ideas, no matter how preposterous, should be tried in practice. One day as I was taking a walk in the sunshine in Paris (September, 1854), the mechanism of the laryngoscope flashed suddenly in my mind. I ran immediately to Charrière, an instrument maker, asking for a small mirror with a long wire handle. He showed me a dentist mirror built in 1851 for a London exhibition. It answered my purpose. I gave six francs for it, and ran to a store to buy an ordinary hand mirror. As soon as I got home, I tempered the little mirror in hot water, so that it would not become dim, and pushed it into my mouth until it pressed against the uvula. My throat is very obedient, and this maneuver was performed readily. With the mouth completely open, I turned with the hand mirror a sun-beam on the mirror in the throat; in another large mirror placed in front I could see my open glottis and below a large part of my trachea. My feelings could not be described. I had really carried out the idea that had pursued me so long." Thus the laryngoscope was developed, not by chance, but through patient effort.

Intravesical Moving Pictures

Professor Stutzin of Berlin recently showed in our medical school the new developments of his use of moving pictures to study organic cavities and especially the bladder. Patience and work have been necessary to secure in vivo and with a slightly modified cystoscope the films shown by Stutzin. One of the findings was the existence of a negative phase as a preliminary to the contraction of the urethral papilla before expelling the urine. The eye can detect only the projection of the urethral meatus, because of the enormous rapidity of the contraction and retraction of the meatus, preceding its projection. As these films have been taken with a Stutzin cystoscope in normal bladders, the physiology of this organ may be studied under conditions hitherto unattainable. Professor Stutzin hopes that the application of this method to other hollow viscera may furnish important details which will elucidate doubtful questions as regards function.

Marriages

ROBERT MCCULLEY HALBACH, New Bedford, Mass., to Miss Beatrice Marie-Louise Burrell of Newport, R. I., in November, 1924.

TRUE P. GOTTSCHALK to Miss Clella Brickley, both of Berne, Ind., at Sioux Falls, S. D., Dec. 25, 1924.

FRANCIS KENNEDY NEILL, Birmingham, Ala., to Miss Mary Field of Petersburg, Va., Dec. 28, 1924.

THOMAS DOBBINS, Kenosha, Wis., to Miss Alma E. Patzke of Racine, Dec. 31, 1924.

Deaths

Grace Lynde Meigs Crowder, Chicago; Rush Medical College, Chicago, 1908; member of the Chicago Pediatric Society; served as director, Division of Hygiene, Children's Bureau, U. S. Department of Labor, Washington, D. C., 1914-1918; formerly member of the Commission on Infant Welfare, General Medical Board, Council of National Defense; author of works on child welfare; aged 43; died, January 20, of injuries received in jumping from the window of a hospital, while suffering from ill health.

Elijah J. Russell, Baltimore; College of Physicians and Surgeons, Baltimore, 1897; member of the Medical and Chirurgical Faculty of Maryland; formerly prosector of anatomy at his alma mater and demonstrator of anatomy, at the Maryland Medical College; Spanish-American War veteran; at one time coroner; aged 58; died, January 16, at the Maryland General Hospital.

Henry H. Clark ● McGregor, Iowa; Chicago Medical College, 1870; Civil War veteran; formerly member of the state board of health, and president of the state board of medical examiners; for more than twenty years proprietor of a hospital bearing his name; aged 82; died, January 18, of heart disease.

John Leopold North ● Miami, Fla.; University of Louisville (Ky.) School of Medicine, 1894; member of the Radiological Society of North America; past president of the Dade County Medical Society; formerly city physician; at one time superintendent of the Miami City Hospital; aged 61; died, Dec. 22, 1924, of angina pectoris.

Horace Martin Sloat, Brooklyn; Long Island College Hospital, Brooklyn, 1887; member of the Medical Society of the State of New York; formerly on the staffs of the Bushwick, Wyckoff Heights and Long Island College hospitals; aged 61; died, January 13.

Philip C. Newbaker ● Danville, Pa.; Jefferson Medical College of Philadelphia, 1869; Civil War veteran; formerly member of the state legislature, the school board and the board of health; aged 81; died, Dec. 30, 1924, of heart disease.

Edwin F. Lindridge, Brooklyn; Bellevue Hospital Medical College, New York, 1875; member of the Medical Society of the State of New York; formerly on the staffs of the Bushwick and Trinity hospitals; aged 74; died, January 12.

James Ralph Bartlett, Springfield, Mo.; Medical Department of the University of the City of New York, 1883; member of the Missouri State Medical Association; aged 63; died, January 3, following a long illness.

Henry Slicer Hodges, Brunswick, Md.; University of Maryland School of Medicine, Baltimore, 1883; member of the Medical and Chirurgical Faculty of Maryland; aged 61; died, January 4, of heart disease.

Arthur Dare, Philadelphia; Jefferson Medical College of Philadelphia, 1890; served in the M. C., U. S. Army, during the World War; formerly on the staff of St. Agnes' Hospital; aged 56; died, January 11.

John Albert Barnes ● Troy, N. Y.; Albany Medical College, 1898; served in the M. C., U. S. Army, with the rank of captain, during the World War; aged 58; died, January 4, following a long illness.

Louis Peter Henkel, Jackson, Mich.; University of Michigan Medical School, Ann Arbor, 1924; intern at the W. A. Foote Memorial Hospital, where he died, January 4, following an operation, aged 33.

Francis Joseph Kelleher, Somerville, Mass.; Medical School of Harvard University, Boston, 1890; also a lawyer; instructor in medical jurisprudence, Tufts College Medical School; aged 59; died, January 1.

J. Perry Lewis ● San Diego, Calif.; Hahnemann Medical College and Hospital, 1895; aged 58; died, Dec. 29, 1924, at Honolulu, Hawaii, of catarrhal jaundice and intestinal complications.

William Herbert Whitney, Westfield, Mass.; Eclectic Medical College of the City of New York, 1881; Eclectic Medical Institute, Cincinnati, 1885; aged 66; died, January 5, at Savannah, Ga.

William Harrison Parker, Irwinton, Ga.; Southern Medical College, Atlanta, 1897; formerly county physician; aged 50; died, January 6, at the Rawlings Sanatorium, Sandersville, of septicemia.

Lemuel L. Mattax, Geneva, Ind.; Starling Medical College, Columbus, Ohio, 1891; county coroner; aged 62; died, January 8, at the Adams County Memorial Hospital, Decatur, of septicemia.

Judson T. Webster, Atlanta, Ill.; Hahnemann Medical College and Hospital, Chicago, 1889; Harvey Medical College, Chicago, 1896; aged 73; died, January 10, of cerebral hemorrhage.

Alexander E. Savage, Greenville, Mich.; Detroit College of Medicine and Surgery, 1893; member of the Michigan State Medical Society; aged 59; died, January 1, of heart disease.

Darwin DeLos Culver ● Aurora, Ill.; Chicago Homeopathic Medical College, 1894; president of the Kane County Medical Society; aged 56; died, January 11, of heart disease.

Joseph W. Du Guid, Macon, Ga.; University of Maryland School of Medicine, Baltimore, 1893; member of the Medical Association of Georgia; aged 53; died in November, 1924.

Amos Walter Thompson ● Saratoga Springs, N. Y.; Medical Department of the University of the City of New York, 1887; aged 62; died, January 7, of valvular heart disease.

Lemuel Ambrose Copenhaver, Englewood, Tenn.; Tennessee Medical College, Knoxville, 1891; member of the Tennessee State Medical Association; aged 60; died, January 3.

Sigmund Ben Avi, Otisville, N. Y.; University and Bellevue Hospital Medical College, New York, 1920; aged 31; died recently, at Bedford Hills, of tuberculosis.

Abner Luther Wilkins, Eastman, Ga.; Atlanta College of Physicians and Surgeons, 1901; member of the Medical Association of Georgia; aged 50; died, Dec. 29, 1924.

Charles Erhard Koch, Cummaquid, Mass.; Eclectic Medical College of Pennsylvania, Philadelphia, 1877; Spanish-American war veteran; aged 69; died, January 3.

Joshua Morgan Goff ● Burnt House, W. Va.; Starling Medical College, Columbus, Ohio, 1888; aged 64; died suddenly, January 5, of cerebral hemorrhage.

Ernest D. Erwin, Jerome, Ark.; College of Physicians and Surgeons, Memphis, Tenn., 1908; aged 44; died recently, of an overdose of phenol, taken accidentally.

Floyd Lesley Newcom, Arlington, Neb.; University of Nebraska College of Medicine, Omaha, 1920; aged 31; died, Dec. 31, 1924, following a long illness.

John H. Dumas, Centralia, Wash.; University of Michigan Medical School, Ann Arbor, 1877; aged 74; died, Dec. 18, 1924, at a hospital in Portland, Ore.

James A. Lovett, Liberty, Texas; University of Alabama School of Medicine, Tuscaloosa, 1876; aged 72; died, Dec. 27, 1924, at a sanatorium in Houston.

William George Damm, Cumberland, Md.; Baltimore University School of Medicine, 1890; aged 71; died, January 4, at the Western Maryland Hospital.

Nelson Winslow Francis, Ormond, Fla.; University College of Medicine, Richmond, Va., 1897; aged 51; died, Dec. 23, 1924, following a long illness.

Arthur Douglas Patton, Montreal, Que., Canada; Chicago Homeopathic Medical College, 1895; aged 69; died, Nov. 28, 1924, following a long illness.

Mabel E. Campbell Collins ● Saginaw, Mich.; Saginaw Valley Medical College, 1900; aged 44; died, Dec. 29, 1924, at St. Mary's Hospital.

Lewis Beall Firey, Norfolk, Va.; University of Maryland School of Medicine, Baltimore, 1890; aged 59; died, January 1, of influenza.

Elder Crawford, Mars, Pa. (registered, Butler County, under the act of 1881); Civil War veteran; aged 78; died, Dec. 28, 1924.

John William Barker, Joplin, Mo.; Barnes Medical College, St. Louis, 1907; aged 48; died, January 6, of heart disease.

Thomas Parker, Jaroso, Colo.; Rush Medical College, Chicago, 1886; aged 71; died, January 5, of a self-inflicted bullet wound.

John Henry Curry, Toledo, Ohio; Medical College of Ohio, Cincinnati, 1866; aged 79; died, January 4, of heart disease.

William L. Douglas, Chattanooga, Tenn.; Chattanooga National Medical College, 1907; aged 58; died, Dec. 25, 1924.

Wilbur G. Fervor, Wakeman, Ohio; Jefferson Medical College of Philadelphia, 1884; aged 65; died, Dec. 24, 1924.

Milton S. Hopper, Gary, Ind.; Medical College of Ohio, Cincinnati, 1881; aged 73; died, January 4.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

"COLLOIDAL GOLD" NOT ACCEPTED FOR N. N. R.

Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following report.

W. A. PUCKNER, Secretary.

"Colloidal Gold" is manufactured by The Kahlenberg-Klaus Company of Two Rivers, Wisconsin. It is claimed to have been developed by Professor Louis Kahlenberg of the University of Wisconsin and Dr. Edward H. Ochsner, attending surgeon, Augustana Hospital, Chicago. The chief advertising matter is a circular in which appear the statements:

"Has proved to be far superior to X-ray and radium in the treatment of inoperable cases of cancer, and also as post-operative treatment."

"The solution contains one-thousandth of one grain of pure gold in colloidal form in every ten drops."

"It is non-toxic."

"It is usually given by mouth, but it may also be administered intravenously in severe cases."

"Under this treatment the patient suffers much less pain, thus obviating the use of opiates. The leucocytes are rapidly increased in number, the general condition of the patient is greatly improved and the growths are gradually absorbed."

The remedy is sold in four-ounce bottles at five dollars a bottle, but a calculation shows that the value of the gold in one bottle is less than one cent.

In response to a letter from the secretary of the Council asking for evidence substantiating the claims for the remedy, the Kahlenberg-Klaus Company referred to an article by Dr. E. H. Ochsner in *Clinical Medicine* for October, 1924. This paper, entitled "Some Newer Developments in the Non-Operative Treatment of Cancer (A Preliminary Report)" was read before the Chicago Medical Society, February 20, 1924. The author says:

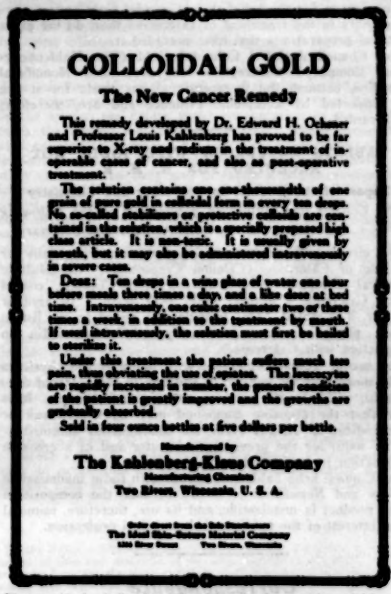
"I believe that cancer is a microbic disease."

"Just as I believe that practically every chemical poison has a chemical antidote, so I have believed for a long time that there is a specific for every microbic disease."

". . . while I am not absolutely positive as yet that I have actually found a true specific, my investigations have, I believe, progressed far enough to justify this preliminary report."

Four cases are then cited, "selected from over forty cases treated with this remedy, to illustrate the effect of the remedy upon different types of carcinoma." Case I was a patient who showed on operation a tumor the size of a fist on the lesser curvature of the stomach and the abdominal wound was closed without attempt at its removal. The patient was given 1/1,000 grain of colloidal gold before each meal, by mouth, for a year and a half. Nearly eighteen months after operation he was "feeling very well with exception at times of pain in the epigastric region," and later was said to be continuing in perfect health. In Case II the patient was operated on for a carcinoma of the breast, which microscopic examination proved to be an adenocarcinoma. Small recurrences which appeared in the scar about two months after operation disappeared while she was receiving colloidal gold, but the patient died about a year after the operation from carcinoma of the right lung. In Case III the patient presented an ulcer, with the appearance of a cauliflower, over the inside of the cheek and most of the lower jaw, without definite glandular enlargement. After excision of the tumor and cauterization, colloidal gold was administered by mouth and intravenously. One year after operation it was reported that the patient "is in the best of health and works every day." Case IV was that of a woman with "an ulcerating carcinoma involving lower two inches of rectum" which almost completely obliterated the lumen. Hemoglobin, 35 per cent.; red cell count, 2,250,000 per cubic millimeter. The mass was cauterized with hot soldering irons, Nov. 12, 1923, and colloidal gold was given by mouth and intravenously. Jan. 24, 1924, the hemoglobin was 70 per cent. and the red cell count 5,430,000 per cubic millimeter. February 15, there was "some roughness of mucous membrane resembling an induration encircling the rectum and extending upward about an inch," but "no tumor mass was discovered."

These four cases are presumably the most striking ones in the reported series of over forty in which colloidal gold was used, and they are reported in sufficient detail to warrant careful consideration. In an article on "Chemotherapy and Tumors" (THE JOURNAL A. M. A., April 17, 1915, p. 1283), Dr. Richard Weil considers the criteria by which the results of methods for the treatment of tumors must be judged, and states that "the demonstrable reduction in size of a tumor, of a kind not to be attributed to the natural processes of evolution of that tumor or of its associated lesions, is the one essential feature of effective therapeutic



COLLOIDAL GOLD

The New Cancer Remedy

This remedy developed by Dr. Edward H. Ochsner and Professor Louis Kahlenberg has proved to be far superior to X-ray and radium in the treatment of inoperable cases of cancer, and also as post-operative treatment.

The solution contains one-thousandth of one grain of pure gold in colloidal form in every ten drops. No so-called stabilizers or protective colloids are contained in the solution, which is a specially prepared high class article. It is non-toxic. It is usually given by mouth, but it may also be administered intravenously in severe cases.

Dose: Ten drops in a wine glass of water one hour before meals three times a day, and a like dose at bed time. Intravenously, one cubic centimeter two or three times a week, in addition to the treatment by mouth. If used intravenously, the solution must first be boiled to sterilize it.

Under this treatment the patient suffers much less pain, thus obviating the use of opiates. The leucocytes are rapidly increased in number, the general condition of the patient is greatly improved and the growths are gradually absorbed.

Sold in four ounce bottles at five dollars per bottle.

Manufactured by

The Kahlenberg-Klaus Company

Manufacturing Chemists

Two Rivers, Wisconsin, U. S. A.

Color glass from the Pyle Distributors

The Ideal Side-Delivery Material Company

Two Rivers, Wisconsin

Photographic facsimile of an advertising circular used in exploiting the latest thing in cancer cures.

intervention." He also says that "in multiple carcinosis, the retrogression of individual nodules is no indication that therapeutic intervention has produced an improvement." Relief of pain, on which the advertising matter for "Colloidal Gold" lays special stress, is of no value in judging the effect of treatment, as it may be due entirely to psychic influences.

Case II is the only one of this series in which the diagnosis was proved by microscopic examination. The disappearance of secondary nodules in the scar might have taken place spontaneously (Weil describes spontaneous retrogression and disappearance of metastatic carcinomata of the skin), and the death from cancer of the lung a little over a year after operation indicates that the colloidal gold had no effect on the course of the disease. In the other three cases there was no microscopic examination of the tumor, and every surgeon and pathologist of wide experience knows how misleading the gross appearance of tumors may at times be. Without confirmation by microscopic examination, no critical student could be expected to accept a diagnosis of carcinoma; and it is almost inconceivable that a serious investigator of a

method of treating cancer should have neglected such an obvious and simple means of controlling his work.

Weil has reviewed the long history of the treatment of cancer by colloidal solutions of metals, which was largely stimulated by the experimental work of Neuberg and Caspari in 1912, and which is based on the theory that colloidal metals either act as ferments or stimulate ferments and cause autolysis of tumors. The cure of a small percentage of experimental tumors in animals led to the use of colloidal solutions of selenium, copper and silver in man; but there is a great difference between transplanted tumors in animals and spontaneous tumors in man, and time has shown that these metals have not been capable of affecting the growth of cancer in man. Until more critically studied cases, supported by microscopic examinations of the tissues, are reported, in which there has been definitely demonstrable retrogression or disappearance of the tumors, the Council can see no reason for the belief that "Colloidal Gold" offers anything more in the treatment of carcinoma than do the other colloidal preparations that have preceded it.

The Council declared Colloidal Gold (The Kahlenberg-Klaus Company) unacceptable for New and Nonofficial Remedies, because the therapeutic claims made for it are not supported by acceptable evidence and are, therefore, unwarranted.

TABLETS CALCREOSE WITH IODIN NOT ACCEPTED FOR N. N. R.

Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following report. W. A. Puckner, Secretary.

In a circular "Formulae and Suggestions to Physicians for the Use of Calcreose (Calcium Creosotate)," the Maltbie Chemical Company lists "Calcreose-Iodin Tablets, coated brown Calcreose 4 grains; Iodin 1-30 grain." In another circular, it is stated, "This formula was added to our list to enable physicians to conveniently administer iodin in conjunction with Calcreose."

The use of Tablets Calcreose with Iodin by the physician would mean that the patient, in addition to the required dose of iodin, will take the creosote compound, Calcreose. It is clear that the creosote compound may be superfluous or contraindicated. In any event, the simultaneous administration of iodin for the prevention of goiter and of a creosote combination is not sound medical practice.

The Council held Tablets Calcreose with Iodin inadmissible to New and Nonofficial Remedies because the composition of the product is unscientific, and its use, therefore, inimical to the interest of the public and the medical profession.

Correspondence

"ARSPHENAMIN DERMATITIS, MERCURIAL POISONING AND LEAD INTOXICATION"

To the Editor:—I wish to comment briefly on a letter written by Dr. Harry Lutz, Augusta, Kan., published January 17.

Physicians who have had little or no experience with sodium thiosulphate might believe what Dr. Lutz has said. I have had little experience with the use of sodium thiosulphate in the treatment of lead poisoning; therefore I know little about its merits in this condition. I would consider, however, that it is just as important to use sodium thiosulphate in the treatment of acute arsenic and mercury poisoning as it is to sterilize one's instruments before an abdominal operation. Sodium thiosulphate is as much a specific in mercury poisoning as quinin is in malaria.

We cannot expect medicine to restore to an individual his kidney after a nephrectomy, and because a medicine does not restore an organ after it has been removed or destroyed by disease or poison is no reason for assuming that the drug has no merit. After mercury or arsenic has destroyed the kidney or liver, the patient will die; but the clinician that is wide awake will recognize the toxic symptoms early enough to save the person that has taken either of these drugs by promptly administering sodium thiosulphate.

P. H. Owens, M.D., Kansas City, Mo.

AID IN HEARING

To the Editor:—A few days ago a patient came into my office to consult me. She gave a history of deafness for the last nine years following discharging ears, the result of "sea bathing." She had an ingenious way of using bone conduction for hearing which she said that she had learned from a countryman peddling canes two years ago. By placing one end of a wooden cane firmly between her teeth and the other end under the lower jaw of the person with whom she wished to speak, she could hear everything spoken even when a low voice was used. I have tried it on a number of my friends after plugging the external auditory canal, and I find that it works the same. I have never seen this method used, nor have I ever read of it, although it seems obvious now that it is called to my attention. It might be of interest to other physicians.

Garry R. Burke, M.D., San Juan, Porto Rico.

"DRAINAGE OF APICAL ABSCESSES OF TEETH"

To the Editor:—I wish to agree heartily with the communication on this subject (The Journal, January 17, p. 221) by Dr. Byron C. Darling. The great majority of dentists will agree that extraction of abscessed teeth is correct procedure.

The thing that attracts my attention in Dr. Darling's letter is the statement that "the further tendency now is to extract all devitalized, pulpless or dead deeth." This is rather confusing nomenclature: A devitalized tooth is a dead tooth, a pulpless tooth is a dead tooth; thus, a dead tooth is either pulpless or devitalized. I think that the dental conception of a dead tooth is one from which the pulp has been removed, and the roots filled. Some dentists, however, still practice mummification of the pulp; and these are dead teeth, with the pulp, although devitalized, still left intact in the root canals.

A little farther on, Dr. Darling says, "To be sure, such teeth are not all exfoliated at once," meaning, I assume, dead teeth. In my clinical experience, I have never yet seen a pulpless tooth exfoliated, but, to be sure, I have seen many hundred requiring extraction, from either acute or chronic, alveolar or peridental abscesses. The pro and con of whether all pulpless teeth should be extracted is a voluminous subject, and one I think, always better settled by the merits of each tooth involved. Indiscriminate extraction of pulpless teeth, when one considers the destruction of good tooth substance required for a proper restoration, is just as detrimental as indiscriminate retention.

Experience of years has taught me that it is absolutely foolhardy to allow an abscessed tooth, be it acute or chronic, to remain in the mouth. The same experience has shown me that not all dead teeth are detrimental to the general health. It would be just as reasonable for medicine to say, We have decided that the only cure for tuberculosis is death, as for dentistry to say, We will extract every pulpless tooth. Every tooth presents to the dentist an individual case, just as does every patient to the doctor. The rule of thumb is not applicable to either.

John E. Marriott, D.D.S., Augusta, Ga.

"ANAPHYLACTIC SHOCK FOLLOWING USE OF AN ORGANIC COAGULANT"

To the Editor:—In THE JOURNAL, January 3, p. 36, is a case report by Dr. Bernard E. Sayre of Chicago entitled "Anaphylactic Shock Following Use of an Organic Coagulant." While I do not dispute the facts mentioned or the antigenic character of the material in question, it would seem to me that the evidence of the existence of anaphylaxis in this instance would be far stronger with the report of the presence of coincident erythema multiforme or urticaria, eosinophilia, and corroboration of the assumed hypersensitiveness by the employment of the usual confirmatory cutaneous tests. In their absence in this case report, it would seem to me possible to explain the occurrence on other grounds than anaphylaxis.

I. S. KAHN, M.D., San Antonio, Texas.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

COMPARATIVE EFFECT OF NICOTIN FROM CIGARETS, CIGARS AND PIPES—FOOD VALUE OF POTATO —TECHNIC OF STERILIZATION

To the Editor:—1. Please compare the harmful effects of the use of cigarets, cigars and pipes, stating which is the most and which the least harmful. Is the paper of cigarets responsible for any of the harmful effects? 2. What is the comparative food value of a potato that is baked and one that is boiled? In boiling a potato is very much of the food value left in the water in which the potato was boiled? 3. How is sterilization of the male and the female done by roentgen ray? Please omit my name. F. B.

ANSWER.—1. So many individual factors are concerned, such as the size and quality of cigar, cigaret or tobacco used, the manner of smoking, and other variables, that any generalizations would be unscientific and liable to criticism. The cigaret smoker is apparently the most likely to inhale, and the inhaling of tobacco smoke is surely more harmful than merely letting it enter the mouth. On the other hand, the amount of tobacco used by even a heavy cigaret smoker is apt to be considerably less than that used by either the pipe or the cigar smoker. It is also true that the larger the number of cigarets the smoker uses, the less of each individual cigaret does he consume, so that at the end of the day the total amount of tobacco consumed by the cigaret smoker will not be as great as would seem on the surface. It is doubtful whether the cigaret paper is responsible for any harmful effects.

2. Boiling the potato without the skin results in the loss of considerable food value, which has been roughly estimated as high as 20 per cent. This is due to the actual loss of the potato substance in the act of peeling, and to the loss of nitrogenous constituents, some carbohydrate and mineral salts which are dissolved by the water. If the peeled potatoes are soaked in cold water before boiling a larger amount of these substances is lost than if they are put at once into hot water, boiled quickly, and removed from the water as soon as cooked. A small amount of water should be used unless the water is used for soup. Baked potatoes and potatoes boiled in the skin retain practically all their food value. The antiscorbutic vitamin is destroyed, but this is not important since the amount present in the potato is very little.

3. The following is a list of references to articles on the technic for sterilization of the male and female by roentgen ray:

Ewald, G.: Fractional Castration with Roentgen Rays and Operation in Psychosis Recurring with Menstruation, *München. med. Wchnschr.* **71**: 336 (March 14) 1924; abstr. THE JOURNAL, May 3, 1924, p. 1406.

Nasjoles, H.: Temporary Sterilization with Roentgen Rays, *Ztschr. f. Geburtsh. u. Gynäk.* **86**: 638 (Dec.) 1923; abstr. THE JOURNAL, March 1, 1924, p. 756.

Bohn, J.: Sterility and Roentgen Rays, *Presse méd.* **31**: 642 (July 21) 1923.

Schinz, H. R.: Roentgen Castration of Men, *Schweiz. med. Wchnschr.* **52**: 886 (Sept. 7) 1922; abstr. THE JOURNAL, Oct. 28, 1922, p. 1354.

Markovits, E.: Temporary Roentgen Sterilization of Man and Wife, *Deutsch. med. Wchnschr.* **48**: 459 (April 7) 1922.

Guillerman, R.: Roentgentherapy in Ovarian Sterilization in Certain Forms of Pulmonary Tuberculosis, *Rev. méd. de la Suisse Rom.* **39**: 326 (July) 1919; abstr. THE JOURNAL, Feb. 7, 1920, p. 426.

Görl, L.: Sterilization of Women by Roentgen Exposure, *Berl. klin. Wchnschr.*, Nov. 23, 1914; abstr. THE JOURNAL, Jan. 9, 1915, p. 184.

Martius: Die Röntgen Kastration in Einer Sitzung, *Deutsch. med. Wchnschr.* **46**: 648, 1920.

Page, K. A.: Ueber halbseitige Röntgenkastration, *Strahlentherap.* **11**: 712, 1920.

DEATH RATE FROM DIABETES

To the Editor:—It is frequently stated that the increase of diabetes in the United States is due to the great increase in the consumption of sugar during the last fifty years. Are there any statistics that will show the death rate from diabetes and the per capita consumption of sugar in different countries of the world where various amounts of sugar are used? Is there any definite information as to diabetes in the rice-eating peoples? Is there any reason to think that wheat bread is more likely to bring on or aggravate diabetes than do rice or the carbohydrate-containing vegetables? FRANCIS RAMALEY, Boulder, Colo.

ANSWER.—The most recent studies on mortality statistics of diabetes are found in the paper by Haven Emerson and Louise D. Larimore (*Arch. Int. Med.* **34**: 585 [Nov.] 1924). The third edition of Joslin's Treatment of Diabetes also contains much statistical information. The answers to these questions are mainly derived from these two sources.

One of the tables presented by Emerson and Larimore shows comparative curves of the death rate from diabetes and the annual per capita sugar consumption in the United States, the United Kingdom and France. These curves are based on studies of more than thirty years' duration, and in all three countries the parallelism between the curves is rather striking. In Italy and in Japan a comparatively low diabetic mortality is noted, but even in Japan there is an upward tendency to the mortality curve. The relative incidence of the disease in different countries may be obtained from other tables, which show an increasing mortality in the United States of from 1.5 per hundred thousand in 1866, to 22.9 in 1923. In England the rise is from 4.1 in 1880 to 10.8 in 1921; in Italy, from 1.4 in 1880 to 5.2 in 1917; in Japan, from 2.2 in 1910 to 3.1 in 1920.

We know of no scientific data bearing on the question of the relative merits of wheat and rice in the diet of diabetics.

Emerson is conservative in his conclusions regarding the possible causes of the increased death rate, as so many factors may be involved. For instance, the total consumption of fruits is increased. Emerson says: "One index of the tendency of our people to use larger amounts of food is the record of per capita consumption of sugar which is offered here not as an explanation of the increased death rates from diabetes in recent years, but more as a token of the tendency to excesses of all kinds, beyond the needs of persons for foods in proportion to their expenditure of energy at the different ages of life, and in particular in the later decades."

CALCULI AND HARDNESS OF WATER

To the Editor:—Discussion has arisen concerning the effect of a large amount of lime and magnesia in the water supply of a community. Is there any basis for the belief that long continued use of hard water containing these elements would seriously affect the community health, particularly as to the predisposition to renal or vesical calculi or the immediate harmful effects on patients with nephritis? Berea, Ohio, is a community of 6,000 people whose water supply is taken from quarry holes. The hardness has been recently about 19. Sterilization is accomplished by sand filtration and "violet ray." The daily consumption is 500,000 gallons. What method might be economically used to lessen this excessive hardness? JOHN A. SHOEMAKER, M.D., Berea, Ohio.

ANSWER.—There is no good basis for the belief that hard waters are deleterious to the health of the normal person, or that renal or vesical calculi are more common among the users of hard than of soft waters. It is perfectly evident, from a standpoint of general health conditions, that hard water regions in this country are not less healthy than soft water regions. The water here described (hardness 19 grains, or 325 parts per million) cannot be regarded as an excessively hard water, although it is harder than the general run of waters in the eastern part of the country. If softening is desired, the most economical process is the so-called lime-soda method. As far as we know, the only large municipal water supply being treated for removal of excessive mineral matter is that at Columbus, Ohio. Undoubtedly the chief chemist of the Columbus water works will be glad to furnish our correspondent with data concerning their plant. The permutit process is also in use; it is less difficult to operate than the foregoing process, particularly on a relatively small scale.

"OIL-OF-SALT"

To the Editor:—I am enclosing a slip received today relative to a product "Oil-Of-Salt" put out by the Mosco Laboratories, Chicago. Their representative was in my office a short time ago telling me of the virtues of this wonderful preparation. He showed me letters from many physicians and industrial surgeons lauding it very highly. This man told me that in one of the Northwestern states, I think Washington, it was compulsory that every industrial surgeon have a supply of this preparation for emergency work, such as burns, cuts and abrasions. I wonder what information you have to offer on this wonderful product. The salesman informed me that there was a rather lengthy article in THE JOURNAL a few months ago commending this product, but I failed to find it. I wonder if you could refer me to the article. The price of this product is $19 a gallon, which seems rather stiff for a linseed oil and turpentine mixture. I would appreciate any information you may give me.

H. M. CAMP, M.D., Monmouth, Ill.
Secretary, Illinois State Medical Society.

ANSWER.—Evidently the Oil-Of-Salt representative believes in living up to the orthodox standards of the "patent medicine" industry by not letting truth stand in the way of a sale. It is not true that the state of Washington requires Oil-Of-Salt as one of the ingredients of the standard first-aid kit of that state. It is true that some three years ago the supervisor of industrial insurance of that state sent out a letter to employers stating that Oil-Of-Salt would be required in the first-aid kit. Shortly after this letter went out, the director of the Department of Labor and Industries of the State of Washington had an investigation made of the merits of Oil-Of-Salt and reported that the investigation indicated that there "was no real merit in the treatment of Oil-Of-Salt to prevent infection." The requirement sent out by the supervisor of industrial insurance was rescinded.

The further statement by the Oil-Of-Salt salesman that THE JOURNAL had published an article commending it is false. Nearly ten years ago, Oil-Of-Salt was investigated and an article published in the Propaganda department giving the results of the analysis, and calling attention to the ridiculous and quackish claims made for it. This article has been reprinted in the pamphlet "Miscellaneous Nostrums" and also in "Nostrums and Quackery," volume 2.

TREATMENT OF HICCUP

To the Editor:—What is the most effective treatment of hiccup?

L. F. CUMMINGS, M.D., Hopkinton, Iowa.

ANSWER.—Hundreds of remedies or measures have been recommended for the treatment of hiccup. Among those successfully employed are such mechanical measures as compression of the phrenic nerve, pressure on the back of the neck, holding the breath, swallowing a bolus of food, tickling the nose to induce sneezing (a procedure recommended in Plato's day), gentle compression of the upper part of the thyroid cartilage, sipping cold drinks, or swallowing finely cracked ice. Injections of ether, from 25 to 30 minims, sometimes avail. Practically all the known sedatives have been recommended.

TRIPP'S "LIQUOR RHEUMATICA"

To the Editor:—Enclosed is some worthless literature on Dr. Tripp's Liquor Rheumatics that came through the mail. Have you any report on this product?

C. T. R., M.D., Detroit.

ANSWER.—The Council on Pharmacy and Chemistry has not considered "Liquor Rheumatica" (Dr. Tripp) marketed by the Norwood Pharmaceutical Company, Chicago, nor has anything been published in THE JOURNAL with regard to it. The advertising for "Liquor Rheumatica" (Dr. Tripp) does not appear to contain any definite information in regard to the composition of the preparation. However, the presence of potassium iodid, calisaya, cimicifuga and "Phytolacca-Rheuma" are mentioned. The following comment on cimicifuga appears in the Epitome of the U. S. Pharmacopeia and National Formulary, published under the auspices of the Council on Pharmacy and Chemistry: One of the class of "domestic medicines" that were tried for a great variety of conditions (used as "stomachic, antispasmodic, aphrodisiac, diaphoretic, diuretic and expectorant"), but which have not been found to possess definite value. We can find no reference to "Phytolacca-Rheuma" in available works on materia medica. The root of Phytolacca decandra (poke root) was formerly recognized in the Pharmacopeia, but its use has been generally abandoned. According to the "Epitome," it is an unreliable irritant, emetic, cathartic and "alterative." From the advertising, it is evident that "Liquor Rheumatica" (Dr. Tripp) is a shotgun mixture of indefinite composition for which unwarranted claims are made.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA: Juneau, March 3. Sec., Dr. Harry C. De Vighne, Juneau.
CALIFORNIA: Los Angeles, Feb. 9-12. Sec., Dr. C. B. Pinkham, 906 Forum Bldg., Sacramento.
KANSAS: Topeka, Feb. 10. Sec., Dr. Albert S. Ross, Sabetha.
MAINE: Portland, March 10-11. Sec., Dr. Adam P. Leighton, Jr., 192 State Street, Portland.
MASSACHUSETTS: Boston, March 10-12. Sec., Dr. Charles E. Prior, 144 State House, Boston.
MISSOURI: St. Louis, Feb. 24-27. Sec., Dr. James Stewart, Capitol Bldg., Jefferson City.
NEW HAMPSHIRE: Concord, March 12-13. Sec., Dr. Charles Duncan, Concord.
PORTO RICO: San Juan, March 3. Sec., Dr. D. Biascoechea, Box 804, San Juan.
VERMONT: Burlington, Feb. 10. Sec., Dr. W. Scott Nay, Underhill.
WYOMING: Cheyenne, Feb. 9-11. Sec., Dr. J. D. Shingle, Cheyenne.

Oklahoma October Examination

Dr. J. M. Byrum, secretary, Oklahoma Board of Medical Examiners, reports the written examination held at Oklahoma City, October 14-15, 1924. The examination covered 12 subjects and included 120 questions. An average of 75 per cent. was required to pass. Four candidates were examined, all of whom passed. Eight candidates were licensed by reciprocity, and 1 candidate was granted a reregistration license. The following colleges were represented:

PASSED		
College	Year Grad.	Per Cent.
Birmingham Medical College	(1911)	84.5
University of Oklahoma	(1924, 3)	84, 86.5, 88

LICENSED BY RECIPROCITY		
College	Year Grad.	Reciprocity with
University of Alabama	(1914)	Alabama
Georgia College of Eclectic Medicine and Surgery	(1912)	Georgia
University of Illinois	(1920)	Illinois
Louisville Medical College	(1893)	Texas
American Medical College	(1899)	Missouri
St. Louis University	(1919)	Missouri
University Medical College of Kansas City	(1913)	Montana
University and Bellevue Hospital Medical College	(1921)	Kansas

Idaho October Examination

Mr. F. A. Jeter, commissioner, Idaho Department of Law Enforcement, reports the written examination held at Boise, Oct. 7, 1924. The examination covered 11 subjects and included 110 questions. An average of 75 per cent. was required to pass. Four candidates were examined, all of whom passed. Three candidates were licensed by reciprocity. The following colleges were represented:

PASSED		
College	Year Grad.	Per Cent.
Tulane University	(1915)	77
Washington University	(1919)	87.4
Jefferson Medical College	(1923)	78.3
Queen's University Faculty of Medicine	(1924)	78.1

LICENSED BY RECIPROCITY		
College	Year Grad.	Reciprocity with
University of Colorado	(1914)	Colorado
Hahnemann Medical College and Hospital, Chicago	(1915)	Colorado
Jefferson Medical College	(1923)	Utah

Wisconsin September Examination

Dr. Robert E. Flynn, secretary, Wisconsin Board of Medical Examiners, reports that 21 candidates, including 1 osteopath, were licensed by reciprocity, and 1 candidate was licensed by endorsement of credentials at the meeting held at Madison, Sept. 24, 1924. The following colleges were represented:

LICENSED BY RECIPROCITY		
College	Year Grad.	Reciprocity with
University of Georgia	(1921)	Georgia
Bennett Medical College	(1912), (1915)	Illinois
Northwestern University	(1923)	Illinois
Rush Medical College	(1917) (1923), (1924)	Illinois, Colorado
University of Illinois	(1924, 4)	Illinois
State University of Iowa College of Medicine	(1920)	Iowa
Harvard University	(1911)	Minnesota, (1922) New York
University of Michigan Medical School	(1914)	Michigan
University of Minnesota	(1905)	Minnesota
Jefferson Medical College	(1917)	Penna.
University of Pennsylvania	(1912)	Illinois
Baylor University	(1921)	Texas

ENDORSEMENT OF CREDENTIALS		
College	Year Grad.	Endorsement was
Johns Hopkins University	(1918)	N.B.M.Ex.

Book Notices

THE FOUNDATION OF HEALTH. A Manual of Personal Hygiene for Students. By William Barnard Sharp, S.M., M.D., Ph.D., Professor of Bacteriology and Preventive Medicine in the Medical Department of the University of Texas. Cloth. Price, $2.50. Pp. 256, with 20 illustrations. Philadelphia: Lea & Febiger, 1924.

While this is designed primarily as a textbook for college students, it fills a gap in a broader field. The book starts with a general discussion of health and disease, and includes such subjects as infection and immunity, reproduction, the digestive system, respiration, motor control and physical exercise. Many persons have no desire for acquaintance with their bodies and functions, but fortunately their number is less than formerly. No one who regards himself as an intelligent being should be ignorant of his physiologic self. Opportunities to acquire correct information of this kind are altogether too rare. Dr. Sharp's book is written so that all may read and understand. Indeed, it is one of the few relatively brief presentations that can be put in the hands both of college students and of all adults to furnish correct information in a concise form. It is hoped that the book will be read as widely as it deserves.

RÖNTGENBEHANDLUNG CHIRURGISCHEN KRANKHEITEN ZUGLEICH EINFÜHRUNG IN DIE PHYSIKALISCHEN UND BIOLOGISCHEN GRUNDLAGEN DER RÖNTGENTHERAPIE. Von Professor Dr. Otto Jüngling, Oberarzt der Chirurgischen Universitätsklinik, Tübingen. Paper. Pp. 468, with 86 illustrations. Leipsic: S. Hirzel, 1924.

The theory and measurement of the different roentgen rays, with the technic of administration, are first considered. The author then discusses the effects of roentgen-ray exposure on the different tissues in human beings and in animals, quoting freely from the literature. From these biologic observations one might expect rather definite clinical results in the treatment of disease. The author shows from his experience that this is not true, and that a great deal of clinical experimentation is necessary. The surgical conditions treated include carcinoma, sarcoma, the benign tumors of various regions of the body, neuralgias, neuritis, hyperplasia of various organs, actinomycosis and pyogenic infections. There is an extensive discussion of the roentgen-ray therapy associated with the standard treatment of tuberculosis. From the author's wide experience, this work points out where roentgen-ray therapy may be preferable to surgery, where it may be a valuable adjunct, and under what conditions it may produce undesirable results.

DIE UEBERPFLANZUNG DER MÄNNLICHEN KEIMDRÜSE. Von Primarius Dr. Robert Lichtenstern. Paper. Price, $1.05. Pp. 113, with 16 illustrations. Vienna: Julius Springer, 1924.

The author has made testis implantation on twenty-six subjects—in two with human testis from the icebox, in two with material from animals. In these four the transplants were soon absorbed, and no effects were observed. In the remainder, human testis tissue was transferred immediately from donor to recipient, without immersion in solutions or loss of heat; to this factor the author ascribes great value. He also emphasizes the technic used in all his cases: bisection of the implanted testis and fixing of the raw surface on freshly scarified muscle tissue in the inguinal region. Seven of the patients were men previously sexually normal, who had lost virility and secondary sex characters after castration. In five of these—all young men—these characters and potency were more or less completely restored after implantation, and had endured in three of them eight, five and four years, respectively. Among six subjects of eunuchoidism, development of sex features and potency followed testis transplantation in two, aged 21 and 28 years, respectively. In one of several cases of homosexuality, a cure is said to have followed implantation. While obviously a partisan, the author inspires more confidence in his statement of clinical observations than usually attaches to such reports. The discarding of animal and preserved human material, the admitted failure to secure the desired effects in more than half his subjects, the asserted limitation of success to young men and not all of them, the prolonged observations on which his conclusions are based, contrast sharply with much of the work reported on this subject, notably in this country. The advisability of the transplantation of fresh human testis tissues in young persons who have been castrated, already established by others, is strengthened by the author's statement that restoration of virility has in three such subjects endured from four to eight years, the longest periods yet recorded.

OBSTETRICS, NORMAL AND OPERATIVE. By George Poulsen Shears, B.S., M.D., Professor of Obstetrics and Attending Obstetrician at the New York Polyclinic Medical School and Hospital. Fourth edition, revised by Philip F. Williams, Ph.B., M.D., Assistant Professor of Obstetrics, Graduate School of Medicine, University of Pennsylvania. Cloth. Price, $8. Pp. 745, with 423 illustrations. Philadelphia: J. B. Lippincott Company, 1924.

We must consider this volume more as an expression of opinion, from the paucity of reference to the world's literature, than as an accumulated outline of the best obstetric teaching impressed with the personality of the writer. There are many things in the book, as the trite, homely way of presenting facts, that make the volume enticing; still, repeatedly we find much to criticize. First, there is a lack of sequence and often a failure of continuity that compromises the value of the subject matter. Too often, facts in no sense cognate are indiscriminately assembled. For example, on page 143 begins the prevention of infection, which includes preparation of the hands, use of gloves, and method of introducing the fingers in vaginal examination; on page 151 is the technic of vaginal examination, separated by rectal examinations. On page 155, under attention to bladder and rectum, is a brief paragraph on psychic influences on the woman in labor, and another on anodynes in labor, while the next page contains the section on anesthesia. Chapter III discusses the management of pregnancy, under the usual academic topics, such as exercise, fresh air, intercourse, blood pressure and urinalysis; but no mention is made of the duties of the physician during this period. The management of pregnancy is not complete unless it includes all those routine examinations which the physician must make with a definite periodicity. A textbook on obstetrics should impress strongly these essentials: a complete physical examination at the earliest possible time—not only of the head, chest and abdomen, but also of the pelvis. Only thus can a suspicion of pregnancy be verified and the abnormalities of uterine positions or of tumors eliminated. Pelvimetry, external and internal, should be practiced as a routine procedure. When this subject is relegated to the discussion of contracted pelves, its importance is not fully impressed on the tyro. The chapter on an antepartum examination more properly should come after a discussion of the dynamics of labor, physiology of labor, and mechanisms, rather than before, for the caption implies the summing up of all the factors the reader must know in order to summarize his findings and judge of their influence on labor. We cannot approve of Dr. Shears' contention that flexion is an active part of labor, as is descent: ever since the study of frozen sections by Hart and Barbour, Winter, Webster and Pestalozza, it has been known that flexion is merely an expression of the normal attitude of the fetus in utero, and not a product of labor. Any degree of extension was observed only in occiput posterior at the brim. As occiput posterior, military attitude, brow presentations and face presentations are merely phases of the same mechanism—extension or deflection—it would be more illuminating to have them presented in this order rather than to have the discussion of the breech and transverse presentations come between. We cannot accede to Dr. Shears' contention that, in face presentation, rotation occurs early—on the contrary, all authorities declare that, in face presentation, rotation may occur only when the enormously elongated hind head has passed the promontory: in shallow pelves we may see the mouth with its slit antero-posterior, and then only will rotation occur. We do not approve of the contention that occiput posterior, brow presentations and face presentations are best treated by version: the tonicity of the uterus and the configuration of the pelvis (type of pelvic deformity) dictate whether

version should be done or manual rotation performed for the occiput posterior, and version or manual correction for brow or face presentation. Manual correction or rotation is no more formidable and presents no greater risk of sepsis than version—all require full surgical anesthesia. We do not approve of the allegation that when an occiput posterior persistent has occurred, "artificial rotation is, of course, out of the question." It is just here that manual rotation or a "Scanzoni" may be of most signal value. We cannot approve of the teaching that forceps may be attempted in difficult cases, with the head above the brim, and that when failure is realized, a version should be performed. Almost every modern authority teaches that version and forceps are not alternative operations, but are complemental: since the days of Schroeder it has been taught to be a manifestation of an error of judgment to attempt one (version or forceps), and when beset with failure to perform the other. The majority of the illustrations are taken from various volumes on obstetrics; especially numerous are those from the French. Illustrations depicting methods of examining for obstetric or clinical purposes should not present the woman undraped from the chin to the lower part of the thighs. Illustrations in a textbook may teach all that is essential with draped figures. Too few of the illustrations conform to this standard.

Medicolegal

Indiana Adopts Rule of Nonliability of Hospitals

(St. Vincent's Hospital v. Stine (Ind.), 144 N. E. R. 537)

The Supreme Court of Indiana, in reversing a judgment for damages obtained by plaintiff Stine, who, while a pay patient in the defendant hospital, was burned by a hot water bottle through the alleged carelessness of a nurse, says that the question of the liability of a charitable institution, such as the defendant association was shown to be, had never been directly decided in Indiana. In the defendant's answer it was stated, among other things, that the primary purpose of the hospital was to render gratuitous service to those unable to pay; that all money received from pay patients was placed in a common fund with all money received as donations and bequests, and the expenses of furnishing services to both the destitute and the pay patients were paid out of this common fund.

Hospitals maintained, not for pecuniary profit, but to relieve the destitute and deserving, are generally classed as public charities. It has been said that the true test of an institution is its origin and objects. If it is founded on donations, and has for its purpose the accomplishment of a charity by the distribution of alms to the needy, or the relief of the destitute and distressed, it is unquestionably eleemosynary.

Is such a charitable institution liable to a beneficiary of its bounty for the negligence of one of its servants? This question has been answered in the negative by the overwhelming weight of authority in this country. This court finds that in at least twenty of the states and in the federal courts, the rule has been declared that a charitable corporation, such as the defendant, is not liable to a recipient of its services for damages caused by the negligence of its employees, provided it has used due care in selecting such employees, while in only three states, namely, Rhode Island, Alabama and Minnesota, have the courts held the contrary. In the first-named state, after the decision holding such corporations liable, the legislature changed the rule by statute, so that now it is the law in only two states that a charitable corporation is liable.

The cases which hold that a charitable institution is not liable base their holdings on different grounds. Some hold that the property of the charity constitutes a trust fund for a specific purpose, and that such fund cannot be diverted from the purposes of the trust to recompense beneficiaries for injuries received by the negligence of employees. Some hold that public policy is best served by encouraging such institutions and preserving their funds for the purposes originally intended. Some hold that the doctrine of respondeat superior (let the master answer) does not apply, because the employees are not engaged in any work for the profit or benefit of the corporation. Some hold that one who voluntarily becomes a beneficiary of a public charity impliedly agrees to waive any liability for the negligence of the employees. Although the courts have disagreed as to the better reason for the rule, yet, with the three exceptions noted, they do agree that such institutions should be exempt from liability to one who is a beneficiary.

This court believes that the rule sustained by the weight of authority and the best reason is that a charitable institution or corporation is not liable to a beneficiary for an injury caused by the negligence of its employees if it has used due care in selecting such employees, but that this exemption from liability does not extend to outsiders or third persons, although some courts hold that the exemption extends to all cases arising out of the negligence of employees. The fact that the injured person was a pay patient is universally held not to render the institution liable.

Revocation of License—Harrison Narcotic Act and Moral Turpitude

(State Board of Medical Examiners et al. v. Friedman (Tenn.), 263 S. W. R. 75)

The Supreme Court of Tennessee says that the original bill in this case was filed by complainant Friedman to review the action of the state board of medical examiners in revoking his license to practice medicine, and to compel his reinstatement as a practitioner. If the board was acting pursuant to an unconstitutional statute, the complainant had the right to seek injunctive relief. And, even though the statute be constitutional, if the action of the board was void, not merely irregular, for failure to follow its provisions, injunction will lie. However, the injunctive relief sought in this case seemed mandatory, rather than prohibitory. Such an injunction will rarely be granted. Still the bill also prayed for a mandamus; and, while the two remedies are not interchangeable, yet it has been said that injunction may be united with mandamus to hold matters in the same position until the mandamus can become operative. But the only ground of demurrer going to the remedy was that the court had no jurisdiction, the complainant having a plain, adequate and complete remedy at law by certiorari to the circuit court. This contention was manifestly unsound. Certiorari is not the exclusive remedy, where a board or inferior tribunal is basing its action on an unconstitutional statute, or where, acting under a constitutional statute, its proceedings are void. Where the proceedings are void, not merely irregular, injunction, or mandamus, will lie, as one or the other may be appropriate to the relief sought.

This court thinks that the right to practice medicine is, undoubtedly, a property right, of which the complainant could not be illegally deprived. There was no contention by him that a license to practice medicine once issued constitutes a binding and valid contract with the state, and confers on the holder of the license a vested right. Such a contention would be, of course, unsound.

Could the complainant, after a trial on the merits before the state board, and an attempt to review its findings by certiorari, attack the constitutionality of the act (Chapter 78 of the Acts of 1901) under which the board was organized and from which its authority was derived, because no provision is made therein for a hearing? Undoubtedly he had the right to review the action of the state board of medical examiners by certiorari. It was conceded in the bill that he did avail himself of this remedy. He explained that the proceeding thus instituted in the circuit court was not prosecuted by reason of his imprisonment. But this was hardly a sufficient excuse. This court is of the opinion that the complainant was not in a position to attack the constitutionality of the act on the ground that it did not provide for notice and a hearing.

The next question considered was whether the board acted illegally in revoking the license of the complainant solely on the ground that his conviction and sentence to the Atlanta penitentiary for violation of the federal statute, known as the Harrison Narcotic Act, evidenced "moral turpitude" within the meaning of subsection "sixth" of Section 16 of the Tennessee act in question. A brief reference to a few of the statutory offenses of Tennessee makes it clear that the mere violation of a revenue act (for on that ground alone was the constitutionality of the Harrison Narcotic Act sustained) may not in and of itself constitute "moral turpitude." Again, by Chapter 105 of the Acts of Tennessee of 1919 it is made permissible for any physician in the state to prescribe as much as 8 grains of morphin daily to any one patient. It cannot, therefore, be said that prescribing morphin in considerable quantities is an act involving "moral turpitude" or even an illegal act, in Tennessee. This court is therefore of the opinion that the state board would not have the right to revoke a physician's license, on the ground that he had been convicted of an offense involving "moral turpitude," solely because he had been convicted of a violation of the Harrison Narcotic Act, and this, in spite of the fact that any violation of the act, as has been pointed out (*U. S.* v. *Woods*, 224 Fed. R. 278), constitutes a felony. But this court thinks it conceivable that there might be a conviction under the Harrison act which would show acts involving "moral turpitude," and remands this case for answer and proof on the question of "moral turpitude." Cases of this nature should not be decided on demurrer, as this one was (in favor of the complainant).

Society Proceedings

COMING MEETINGS

Central Section of the American Roentgen Ray Society, Detroit, Feb. 19-21. Dr. B. R. Kirklin, Western Reserve Life Bldg., Muncie, Ind., President.

Middle Section of American Laryngological, Rhinological and Otological Society, Lafayette, Ind., Feb. 21. Dr. George F. Keiper, 14 North 6th Street, Lafayette, Ind., Chairman.

THE FEDERATION OF AMERICAN SOCIETIES FOR EXPERIMENTAL BIOLOGY

Including the American Physiological Society, American Society of Biological Chemists, American Society for Pharmacology and Experimental Therapeutics and American Society for Experimental Pathology

Annual Meeting, held at Washington, D. C., Dec. 29-31, 1924, in affiliation with the American Association for the Advancement of Science

DR. A. S. WARTHIN, Ann Arbor, Mich., Presiding

Relation of the Suprarenal Cortex to the Thyroid and Thymus Glands

DR. DAVID MARINE, New York: Suprarenalectomy in rats is followed by hyperplasia of the thymus, reaching its height in a few weeks and probably due to a disturbance in the interrelation of other endocrine glands. Involuted thymuses may be regenerated in this way, or prepubertal hyperplasia brought about in young animals. Thyroidectomy hastens and gonadectomy delays thymus involution; thyroidectomy is able to prevent the thymus regeneration which combined gonadectomy and suprarenalectomy would otherwise have caused. These interrelations have obvious applications to thymic disease and the lymphatic diathesis in infants and young children.

Function of the Capillaries

L. J. HENDERSON, Boston: The extremely important function of the capillaries in taking care of the enormously changing needs of the tissues may be shown mathematically. By great variations in the size of the capillary bed, it is possible to furnish oxygen and remove carbon dioxid in suitable quantities.

Source of Energy in Muscular Work

GRAHAM LUSK, New York: Evidence tends to refute the opinions of A. V. Hill and Meyerhof, that carbohydrate is the only source of energy in muscular work. From studies of the respiratory exchange in phlorhizinized animals, the conclusion must be drawn that fats may be used directly in furnishing energy for muscular work.

Effects of Meteorologic Phenomena on Syphilis

DR. WADE HAMPTON BROWN, New York: By the intensive quantitative study of such meteorological phenomena as season, temperature, moisture and the hours of sunlight, it is found that they have a considerable effect on such experimentally induced diseases as syphilis and cancer, in laboratory animals. While the reasons for these influences are not yet apparent, they were so clearly demonstrated that it would seem necessary henceforth for conscientious investigators to control their experiments in these respects as far as possible, or at least always to take them into account in weighing their results.

Administration of Insulin by the Alimentary Tract

JOHN R. MURLIN, Rochester, N. Y.: Good results were obtained experimentally as well as in a few clinical cases with insulin by mouth, though of course they were far less striking than when the subcutaneous route was used.

A Pseudoaffective State in Cats

DR. W. B. CANNON, Boston: The bodily changes that accompany extreme emotions are elemental, and many are the same in man and animals. After the destruction of both frontal lobes and the lateral cortices of cats whose hearts had been denervated and vascular system attached to pressure recording apparatus, numerous "release phenomena" were observed. Struggling, scratching, biting, extension of claws and erection of hair, occurring frequently but not continuously, were associated with increased blood pressure and blood sugar content.

A Hormone Isolated from the Parathyroid

DR. J. B. COLLIP, Edmonton, Alta.: An active principle, as powerful as insulin, has been isolated which, on injection, will prevent tetany for thirty hours in parathyroidectomized animals. One such animal has been kept alive for ten weeks by the use of this extract. A rise in blood calcium was produced so that vomiting occurred, and then weakness, atony, coma and death. The blood became so thick that it would not pour. Dogs without both thyroid and parathyroid glands were more sensitive, which is the first definite evidence of antagonism between the thyroid and parathyroid glands. When this work is extended and verified, it should rank as an extremely important physiologic discovery.

Chemical Regulation of Respiration

DR. ROBERT GESELL, Ann Arbor, Mich.: The reaction of the circulating blood is not the factor controlling the stimulation of the respiratory center. Of greater importance is the condition within the center itself. Novy's important study of the respiration of cells, such as the tubercle bacillus, emphasized the need in biology for studying pure cell preparations, rather than tissues or whole animals. The respiratory quotient for the tubercle bacillus was given (0.836, glycerin; 0.992, glucose), showing that the tubercle bacillus "needs air as much as an animal does."

Mercurochrome-220 Soluble

DR. HUGH YOUNG, Baltimore: Efforts to obtain a true "therapia sterilisans magna" have had partial success with mercurochrome-220 soluble and gentian violet.

Vitamins

HARRY STEENBOCK, PH.D., Madison, Wis., and DR. ALFRED F. HESS, New York: The recent discovery that ultraviolet light can impart antirachitic properties to certain substances previously inactive in this respect makes necessary a revision of our nomenclature or our ideas in relation to vitamins. We must apparently no longer speak of an antirachitic vitamin but of antirachitic activity. Purified cholesterol is the only

highly purified substance that we have activated. This observation opens up a new point of view concerning the function of cholesterol in the body.

AMERICAN SOCIETY FOR EXPERIMENTAL PATHOLOGY

Reaction to Indicators of Living Mammalian Tissues

Dr. Peyton Rous, New York: The whole animal having been colored with the dye by injection, his tissues were examined (partly dissected and spread out under oil) and the color of the indicator was seen to change under various treatments, such as etherization and asphyxia.

Tissue Cultures

Dr. Montrose Burrows, St. Louis: A method of identifying growth-promoting substances in vivo has been discovered, and can be applied to a study of a so-called ovarian horomne.

Blood Sugar Studies

Dr. T. G. Miller, Philadelphia, and Dr. F. W. Hartman, Detroit: Most careful controls are needed of all the possible variables in increasing the value of the blood sugar test and of the deductions that might be made from blood sugar findings.

Thyroid Studies

M. O. Lee: Thyroidectomy and thyroid feeding were found to have no effect on menstruation in the white rat.

Dr. D. P. Seecof, New York: I have found definite mitochondrial changes in the thyroid running parallel with experimental hyperplasia and hypoplasia of the gland.

Experimental Meningo-Encephalitis

Dr. C. V. Weller, Ann Arbor, Mich.: Meningo-encephalitis, produced by feeding lead to rabbits, showed the histopathology of this condition and demonstrated that extremely minute amounts of lead can be detected in the tissues with the perfected Fairhall method.

Urobilin Production

Drs. P. D. McMaster and J. E. Elmendorf, New York: The value of an improved method in clearing up doubtful and disputed points has been demonstrated. Whereas it has long been doubtful where urobilin was produced, the use of Rous and McMaster's bag for the collection of uncontamianted bile over long periods conclusively proved that urobilin is not formed in the liver and therefore must be formed in the intestine or in other places if bacteria have access. Its increase in hemolytic conditions shows its relation to hemoglobin and confirms the value of urobilin tests as indicators of the amount of blood destruction.

Experimental Anemia

Dr. Meyer Bodansky, Galveston, Texas: A study of the distribution between the blood plasma and corpuscles of unsaturated fatty acids, cholesterol and its esters in experimental anemia shows that they are kept not only within physiologic, but within very close numerical, limits. This is contrary to the previous work of Eppinger, J. King and others, which has served as the basis for the doctrine of "hypersplenism" in certain hemolytic diseases. However, whenever the size of the corpuscles was increased without any hemoglobin increase, there was an increase in the unsaturated fatty acids—an interesting side light on Bloor's hypothesis that red cells take up fatty acids to join with lecithin and other lipoids.

Hypotonic Hemolysis

S. C. Brooks, Washington, D. C.: The effect of cations on the susceptibility of erythrocytes to hypotonic hemolysis, I found, as did previous observers, to differ widely in different species. Cattle, for instance, unlike many pigs and rats, have no potassium in their red cells.

Experimental Peptic Ulcer

Dr. F. C. Mann, Rochester, Minn.: The problem of experimental peptic ulcer may be divided into three chapters: (1) formation, (2) healing and (3) chronicity. A method of forming ulcers has been devised whereby the current in the intestine is so diverted that the alkaline secretion enters far from the acid. This almost always produces a chronic ulcer, which if untreated goes on to perforation. Healing may be obtained in two ways: either by draining the stomach elsewhere (which, however, invariably produces a fatal ulcer in the new site) or by so anastomosing sections of the intestine that the alkaline duodenal juice flows over the ulcer.

Studies of Renal Function

Dr. F. M. Allen, Morristown, N. J.: The blood volume increases in various experimental and clinical renal lesions, especially if water or salt solution is injected.

Dr. Isaac Starr, Jr., Philadelphia: In unanesthetized rabbits, prolonged injection of epinephrin produced albuminuria. The fact that temporary renal vasoconstriction produced by asphyxia, carbon dioxid inhalation or bleeding also caused albuminuria, confirmed Rich's prediction, in 1922, that albuminuria could be caused by vasoconstriction.

Malnutrition and Maze Test

Drs. A. H. Smith and Anderson, New Haven, Conn.: Rats stunted by insufficient nourishment learned the intricacies of a maze with a food prize at the end more quickly than their luckier and portlier companions.

Blood Coagulation

D. D. Van Slyke, Ph.D., New York: Taking as end point the first appearance of fibrin crystals under the microscope, instead of the usual test of clot consistency, a constant period is found in normal rabbit's blood between twenty and thirty seconds, which, however, is increased several hundred per cent. in abnormal conditions. This test was applied to Brown and Pearce's tumor-bearing rabbits.

Irradiation of Lymphangiomatous Nevi

Dr. A. S. Warthin, Ann Arbor, Mich.: Clumping of cells, endothelial shrinkage, hydropic degeneration of epithelium, fusion into syncytial masses and stroma changes can only be referred to here. Continued persistence of clumps of viable cells emphasizes the clinical fact that it is extremely dangerous to tamper with pigmented moles by insufficient means. If removal is attempted, it should be done most thoroughly, to prevent the dissemination of melanosarcoma, one of the most malignant tumors known.

Experimental Spirochaeta Cuniculi Lesions

Dr. Ruth Wanstrom, Ann Arbor, Mich.: The rabbit should be condemned as a laboratory animal on account of the frequency of spirochetal, bacterial and unknown spontaneous infections, which cloud the issue of experiments in such important diseases as syphilis, encephalitis and nephritis. Experimentalists should study the comparative pathology of this and other laboratory animals.

Monilia in Psoriasis

Dr. M. S. Fleisher, St. Louis: Monilia have been found in the feces, blood and skin scrapings of so many more cases of psoriasis than of normal individuals that a causal relationship must exist. This view is strengthened by the clinical improvement that has occurred after the use of vaccines prepared with these organisms.

Relation of Yaws to Syphilis

Dr. H. J. Nichols, Washington, D. C.: Studies on clinical yaws have shown the gradual development of a positive Wassermann test. Because of this and of observations on experimental yaws in the rabbit, I believe that yaws is probably an unusual type of syphilis.

Smallpox Morbidity and Mortality for 1923.—The totals for smallpox for the year 1923 were: cases, 5,429; deaths, 42; aggregate population, 30,144,759. These figures give a case rate of 0.18 per thousand population, and a death rate of less than 0.0014 per thousand.—*Pub. Health Rep.* **39**:1657 (July 11) 1924.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL for a period of three days. No foreign journals are available prior to 1920, nor domestic prior to 1923. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).
Titles marked with an asterisk (*) are abstracted below.

American Journal of Ophthalmology, Chicago

7: 909-978 (Dec.) 1924

Rôle of Epithelial Cell in Conjunctival and Corneal Infections. H. J. Howard, Peking, China.—p. 909.
Recognition of Epithelial Parasites. W. C. Finnoff, Denver.—p. 926.
Case of Agricultural Conjunctivitis. S. R. Gifford, Omaha.—p. 930.
Prooly Movable Instrument for Ophthalmoscopy with Yellow-Green Light. J. S. Friedenwald, Baltimore.—p. 940.
Suturing of Conjunctiva in Cataract Operations. H. V. Wordemann, Seattle.—p. 943.
Orbital Cavernous Hemangioma with Pulsating Exophthalmos. Removal by Electrocoagulation. G. O. Ring, Philadelphia.—p. 946.
Cataract Following Electric Shock. W. E. Bruner, Cleveland.—p. 950.
Traumatic Aniridia. J. R. Rogers, Grand Rapids, Mich.—p. 950.

Annals of Otology, Rhinology and Laryngology, St. Louis

33: 1009-1434 (Dec.) 1924

Foreign Bodies in Air and Food Passages in 524 Cases. C. Jackson, Philadelphia.—p. 1009.
Cicatricial Stenosis of Esophagus; Treatment by Continuous String, Retrograde Bougienage. G. Tucker, Philadelphia.—p. 1180.
Histopathologic Changes in Excised Faucial Tonsils. H. H. Bell, St. Louis.—p. 1224.
Sarcoma of Esophagus. H. B. Orton, Newark, N. J.—p. 1236.
Nasal Hump; Simplified External Operation. S. E. Roberts, Kansas City, Kan.—p. 1251.
Persistent Infantile Ethmoid. J. J. Shea, Memphis, Tenn.—p. 1256.
Atrophic Rhinitis and Ozena. A. J. Lorie and P. Lux, Kansas City, Kan.—p. 1263.
Conservative Treatment of Chronic Suppurative Ear. W. H. Haskin, New York.—p. 1272.
Thrombosis of Lateral Sinus. J. B. Nafzger, Sioux City, Iowa.—p. 1287.
Ciliated Epithelium and Other Protective Agencies. H. L. Swain, New Haven, Conn.—p. 1299.
Effect of Roentgen-Ray Therapy on Impaired Hearing. D. C. Jarvis, Barre, Vt.—p. 1307.
Otitis Media in Scarlet Fever. E. L. Ross, Chicago.—p. 1317.
Hemorrhage Following Adenoid Operation. F. W. Bailey, Cedar Rapids, Iowa.—p. 1327.
So-Called Primary Thrombosis of Lateral Sinus. E. T. Seaseney, St. Louis.—p. 1331.
Fulminating Septic Infection of Pharynx and Larynx. H. Smith, New York.—p. 1339.
Common Colds. S. H. Large, Cleveland.—p. 1350.
Cough as Symptom of Maxillary Sinus Disease. G. J. Dennis, Chicago.—p. 1356.
Left Temporal Lobe Abscess: Two Cases. C. F. Yerger, Chicago.—p. 1364.
Intranasal Syphilis. C. H. Christoph, Chicago.—p. 1379.
Cellulitis of Orbit in Infants and Children: Ten Cases. K. A. Phelps, Minneapolis.—p. 1391.
Suspended Respiration in Case of Brain Abscess. F. N. Sperry, New Haven, Conn.—p. 1401.

Archives of Dermatology and Syphilology, Chicago

10: 673-816 (Dec.) 1924

*Congenital Ectodermal Defect. G. M. MacKee and G. C. Andrews, New York.—p. 673.
Experimental Acne Varioliformis. M. M. Strumia, Philadelphia.—p. 702.
Precancerous Dermatoses: Case. T. Fukamachi, Tokio, Japan.—p. 714.
*Kahn Reaction for Syphilis. I. Diagnostic Value. H. L. Keim, Ann Arbor, Mich., and R. L. Kahn, Lansing, Mich.—p. 722.
Stability of Desiccated Beef Heart Muscle Powder for Preparation of Antigens for Conduct of Complement-Fixation Tests in Syphilis. R. A. Kilduffe, Los Angeles.—p. 734.
Relation of Natural Antisheep Hemolysin of Human Serums to Kolmer's Quantitative Complement Fixation Test for Syphilis. R. A. Kilduffe, Los Angeles.—p. 745.

Congenital Ectodermal Defect.—MacKee and Andrews report a case of congenital alopecia with congenital deformation of nails. There was a paucity of scalp hair and absence of eyebrows and eyelashes; saddle nose; protrusive upper lip; pseudorhagades; papular lesions; lack of definition of vermilion border of lips; mongolian facies. The patient also had prominent supra-orbital ridges, depressed nasal bridge, protrusive upper lip, small lobe of ear, radiating, linear defects at the oral commissures and near the nostrils; aplasia of the nails; narrow lower half of face; unusually large number of papules on the face; absence of atrophic rhinitis. The affection is familial. Most of the patients and their ancestors appear to be free from syphilis and tuberculosis. The cause of the developmental defect is unknown.

Value of Kahn Reaction for Syphilis.—The diagnostic value of the Kahn precipitation test for syphilis was studied by Keim and Kahn in 2,600 cases in comparison with two Wassermann tests—one highly sensitive and one more conservative in character—with the following results: In primary syphilis (twenty-five cases), the Kahn test was found slightly more sensitive than either of the two Wassermann tests. In secondary syphilis (sixty-four cases), there was agreement in the three methods. In tertiary syphilis, excluding cerebrospinal (eighty-seven cases), the Kahn test was found slightly more sensitive than both Wassermann tests except that in visceral syphilis it compared with the more sensitive Wassermann test. In cerebrospinal syphilis (192 cases), the reactions with the Kahn test fall about midway between the highly sensitive and conservative Wassermann tests. In latent syphilis (218 cases), the reactions with the Kahn test compare favorably with the reactions with the long icebox fixation Wassermann test. In congenital syphilis (thirty-nine cases), the Kahn test was slightly more sensitive than either of the two Wassermann tests. In nonsyphilitic controls (1,975 cases), the Kahn test gave two one plus reactions and two two plus reactions in dermatologic conditions apparently nonsyphilitic.

Archives of Internal Medicine, Chicago

34: 739-892 (Dec.) 1924

*Pathology of Pneumonia Caused by Bacillus Influenzae During Inter-Epidemic Period. D. Brannan and E. W. Goodpasture, Pittsburgh.—p. 739.
*Familial Blood Dyscrasias. L. M. Morris and E. H. Falconer, San Francisco.—p. 757.
*Sickle Cell Anemia with Necropsy. G. S. Graham, Birmingham, Ala.—p. 778.
*Production of Experimental Diabetes Insipidus. G. M. Curtis, Chicago.—p. 801.
*Association of Achylia and Anemia of Different Types in Three Members of Family. Behavior of Color Index. K. Faber and H. C. Gram, Copenhagen, Denmark.—p. 827.
*Incidence of Syphilis of Aorta with Interstitial and Parenchymatous Neurosyphilis. J. H. Musser, Jr., New Orleans, and A. E. Bennett, Omaha.—p. 833.
*Relation of Suprarenals to Cholesterol Metabolism. J. J. Joslom, Cleveland, and E. Shorr, New Haven, Conn.—p. 841.
*Treatment of Pneumonias in Children with Blood and Serum of Chickens. H. C. Berger and J. G. Montgomery, Kansas City, Mo.—p. 867.

Pathology of Influenzal Pneumonia.—Brannan and Goodpasture report in detail five cases of acute bronchopneumonia in which the influenza bacillus was the predominant or an important infecting agent in the lungs. In four of the five cases, the invasion by the influenza bacillus was associated with a pneumococcus infection. In two of these there was an onset characteristic of lobar pneumonia and at necropsy one or more lobes were involved by a more or less diffuse pneumonia containing pneumococci, but atypical in their gross pathologic anatomy; while other lobes presented lesions recognized grossly as caused by the influenza bacillus. A third case gave a history such as might have been due to primary influenza bacillus infection and the pulmonary lesions were caused by this organism alone, while a patch of fibrinopurulent pleuritis over one lobe was the result of a pneumococcus infection. The fourth case was that of an old man who had been on a drunken spree for several days. He had a blood stream infection with Type III pneumococcus, and had an abscess on one arm from which a pure culture of this organism was recovered. At necropsy, no lesion attributable to the pneumococcus was found in the lung, but a widely disseminated punctate bronchopneumonia in which influenza bacilli played the dominant rôle. The fifth case was a bronchopneumonia secondary to a gangrenous appendicitis with pylephlebitis and abscesses of the liver containing *Staphylococcus aureus* and *Bacillus coli*. The influenza bacillus was the inciting agent of the pneumonia, and the lesions were characteristic grossly and microscopically. It thus appears in four of the five cases that bronchopneumonia was secondary to another and, perhaps, prior infection with the pneumococcus. In none of these, however, was there a

typical lobar pneumonia, and in one, notwithstanding a blood stream invasion by the pneumococcus, there was no localization of it in the lungs.

Familial Blood Dyscrasias.—Morris and Falconer report five cases of a type of familial acholuric jaundice, which varies decidedly from the typical picture. A father, his three sons and one daughter were affected. Cases of other familial anemias are also reported. The authors caution that before cases are grouped as familial splenomegalies, it is necessary to eliminate certain common sources of infection, syphilis, malaria and certain of the tropical diseases being most common factors for error. Before cases are grouped as familial anemias, it is necessary to eliminate certain common toxic and infectious factors, lead, arsenic, syphilis and malraia being common sources of error. Family diseases of the spleen are probably related in many instances to a congenital predisposition of the hemolytopoietic system. A disposition toward inferiority of the hematopoietic system probably exists. Detailed family histories are essential to prove this point.

Sickle Cell Anemia.—Sickle cell anemia has been held to constitute a definite disease entity. The clinical and pathologic study of a well defined case by Graham is believed to confirm that view. Characteristic signs and symptoms are readily demonstrable by clinical and laboratory methods, while postmortem examination reveals interesting lesions particularly affecting the hematopoietic system. The number of cases thus far studied at necropsy is too limited to allow the formulation of any far-reaching conclusions as to the exact nature of the disease. A tentative working hypothesis is, however, proposed. The condition may consist in an underlying status, determined primarily by deeply rooted racial characteristics and brought into clinical evidence in occasional persons through the immediate action of toxic, metabolic or infectious exciting agents. There is a certain amount of evidence favoring the view that this immediate causative factor is bacterial and particular suspicion is directed toward the streptococcus.

Experimental Diabetes Insipidus.—By injury of the hypothalamus in the region of the pituitary stalk Curtis was able to produce, besides several transient polyurias, one of long duration. An extensive daily study of this case has shown that it corresponds to certain cases of diabetes insipidus occurring clinically, more especially to those regarded as primary or functional polydipsias. In the one case, which may fairly be called an experimental diabetes insipidus, the water exchange was apparently lowered by fever, and definitely so by starvation. Phenolsulphonephthalein elimination was normal. High protein diets, those containing considerable protein and salt, and salt added to all diets clearly increased the water exchange. The chlorids were especially polyuric. Under enforced conditions, water and fluid restriction with salt feeding, the kidney was able to concentrate both solids and chlorids. The blood chlorid was found consistently higher than normal in this dog, and higher than that of normal dogs on similar regimens. Pituitary extract given subcutaneously decreased the water exchange, increased both the solid and chlorid concentration of the urine and lowered the higher blood chlorid.

Association of Achylia and Anemia.—Three cases of anemia occurring in one family are reported by Faber and Gram. All showed gastric achylia. Two patients suffered from typical pernicious anemia and one from a pronounced microcytic anemia. A case of typical pernicious anemia is reported in which the index during a remission and part of a relapse fell far below one, so that the picture in this and other respects resembled that of a simple anemia. The behavior of the index in various stages of pernicious anemia is analyzed on the basis of fifty-four cases. It seems that the color index is generally lower during remissions than at any other stage of the disease. A normal index, however, is met with in barely one fourth of the remissions. Two of these remissions with normal index proved to be persistent, so that renewed examinations after several years failed to disclose the slightest trace of the disease.

Syphilis of Aorta and Neurosyphilis.—A clinical study made by Musser and Bennett of spinal fluids obtained from thirty cases of syphilitic aortitis, of which fourteen were aneurysms, showed that 20 per cent. had associated cerebrospinal infection. A comparative necropsy study of the frequency of associated late aortic syphilis with different varieties of neurosyphilis was made. Of 102 cases of vascular neurosyphilis, 38 per cent. had late syphilitic aortitis and 8.9 per cent. had advanced to the stage of aneurysm. While in 110 general paralytic patients, 28 per cent. had syphilitic aortitis with 3.4 per cent. aneurysms and 26 per cent. of fifty tabetic necropsies revealed syphilitic aortitis with no aneurysms. Advanced syphilis of the aorta and resulting aneurysms are more frequently associated with the endarteritic and meningeal (interstitial) form of cerebrospinal syphilis than with the parenchymatous (tabetic and general paralytic) variety. In the early stage of spirochetemia there is invasion of every aorta. In certain persons there occurs extensive vascular disease, probably the result of vasotropism of *Spirocheta pallida*. In others, the aortic lesions are mild, and the strain of spirochete has higher invasive qualities and attacks nervous tissue with resulting neuronic degeneration by the neurotropic strain.

Cholesterol Metabolism.—The blood cholesterol, blood urea or nonprotein nitrogen, blood sugar and blood concentration were studied by Joelson and Shorr before and after operation in dogs which were kept on a carefully calculated constant diet. A majority of the animals that had a bilateral suprarenalectomy done in one stage showed a hypercholesterinemia following the operation. Removal of one or one and a half suprarenals caused an increase in the blood cholesterol in every instance. No consistent findings were observed in the blood sugar determinations. In a large majority of the animals, bilateral suprarenalectomy resulted in a definite rise in the blood urea or nonprotein nitrogen. The blood concentration was usually increased after operation. Injections of epinephrin or extracts of pigs' fresh suprarenal glands did not influence the blood cholesterol.

Treatment of Pneumonia with Chicken Blood.—Berger and Montgomery present the results of their work, both with laboratory animals, and with children in whom pneumonia was treated with the blood or serum of fowls, mostly chickens. Apparently in the normal chicken serum a protective substance against the pneumococcus of Types I, II and III is present. This protective substance is not an agglutinin. The protective power of chicken serum, if unpreserved, in time becomes very much attenuated even if kept under sterile conditions, and may finally become entirely inert. Sixty-three consecutive cases of pneumonia—seventeen bronchopneumonias and twenty-four lobar pneumonias—were treated with the blood or serum of chickens. Of these, three bronchopneumonia patients and two lobar pneumonia patients died. The mortality was 12.2 per cent. Twelve cases of bronchopneumonia and ten cases of lobar pneumonia were admitted to the wards during the same period of time, receiving the usual pneumonia treatment, but no chicken blood or serum. Of these, seven bronchopneumonia and one lobar pneumonia patients died. The mortality was 36.3 per cent. No selection of cases was made for administering the chicken blood or serum. Those patients that did not receive it were either admitted to another service in the hospital or there was no serum available at the time.

Atlantic Medical Journal, Harrisburg, Pa.

3: 127-194 (Dec.) 1924

Acrodynia. R. K. Rewalt, Williamsport, Pa.—p. 127.
*Relation of Baby Welfare Work to Physician. G. V. Overholser, Reading.—p. 130.
Hydronephrosis in Childhood. A. E. Siegel, Philadelphia.—p. 135.
*Nonspecific Protein Reaction as an Adjuvant to Endocrine Therapy. R. H. Spangler, Philadelphia.—p. 138.
Methods of Reconstructing Defective Anterior Abdominal Wall. W. W. Babcock, Philadelphia.—p. 144.
Clinical Value of Serums and Vaccines in Treatment of Surgical Infections. L. J. Hammond, Philadelphia.—p. 153.
Gastric Hyperacidity. E. B. Eddie, Connellsville, Pa.—p. 159.
Relation of Dermatology to Internal Medicine. W. H. Guy, Pittsburgh.—p. 162.
Organization and Development of Clinical Facilities for Child of Preschool Age. D. A. Thom, Boston.—p. 165.

Baby Welfare Work.—Overholser is convinced that the greatest need for baby welfare work exists in small towns

and rural districts. A campaign of education in this work is urgently needed there, for many deaths are caused annually through neglect and ignorance of the simplest rules of infant feeding. The larger centers of population are devoting much time and attention to this work with the most gratifying results; but in the rural districts, where the hygienic conditions are usually much better, this condition does not obtain. In the cities it is much easier for mothers to congregate, and physicians and nurses are available to organize and conduct these centers. Some plan must be formulated which will give the mothers in the country districts the benefit of these life-saving stations. Here is an opportunity for real service for the progressive physician. Baby welfare work is supplying a need for greater service in the community. Every practitioner's office should be a baby welfare center, a baby saving station, a place where mothers may take their babies, and be greeted by a doctor who considers it a privilege to treat their babies with the consideration to which they are entitled, who will examine them with such painstaking care that these mothers will leave his office convinced that nothing has been overlooked; a place where mothers will feel free to come for advice and instruction relative to the care and feeding of their babies; where they will be encouraged when they take good care and tactfuly reproved for negligence and indifference. The reward will be great in saving the lives of countless babies and in the merited patronage of grateful mothers.

Nonspecific Protein and Endocrine Therapy in Epilepsy.—Spangler reports cases illustrating several types of endocrine disturbance encountered in epileptic patients, and treated by the intramuscular injection of venom protein (crotalin) solution in conjunction with the oral administration of glandular substances. The results seem to show that nonspecific protein injections may be employed as activators to the glands of internal secretion and thus be of value as adjuvants to endocrine. Spangler believes that so-called "endocrine epilepsy" accounts for not more than 5 per cent. of the total number of cases classified as essential epilepsy.

Boston Medical and Surgical Journal

192: 1-42 (Jan. 1) 1925

*Urinary Retention. J. H. Cunningham, Boston.—p. 1.
Bladder Involvement in Diverticulitis of Sigmoid: Two Cases. F. H. Colby, Boston.—p. 6.
*Ruptured Uterus: Case. L. E. Phaneuf, Boston.—p. 8.

Urinary Retention.—Cunningham states that urinary retention is dependent on stasis in any part of the urinary tract, and that such stasis, alone or associated with renal infection, results in faulty kidney elimination; that in consequence waste nitrogen products accumulate in the blood and that renal deficiency throws extra work on the circulation. The means of recognizing this combination of conditions is available by a careful complete examination of the urinary tract and its secretion; by blood chemistry and renal function tests; and by investigation of the circulatory system. The treatment is directed primarily toward relieving the obstruction and stasis, either by nonoperative or operative means; but the kidneys may be improved by appropriate measures after the stasis has been relieved; and these measures include forcing fluid intake, catharsis, circulatory support, and the use of urinary antiseptics.

Rupture of Uterus.—In the case reported by Phaneuf the probable cause of rupture was the growth of placental villi in the anterior wall of the lower uterine segment, because of a placenta praevia. The rigid cervix filled with scar tissue failed to dilate with the uterine and the vaginal tamponade, and the weakened lower segment ruptured under the influence of the uterine contractions. The administration of salt solution by hypodermoclysis through a cecostomy opening for three days allowed the patient to react until she was transfused, and the transfusion prepared her for hysterectomy.

Indiana State Medical Association Journal, Ft. Wayne

17: 403-448 (Dec.) 1924

Tuberculosis. E. Jackson, Denver.—p. 403.
Treatment of Uveal Diseases. W. L. Benedict, Rochester, Minn.—p. 408.
Fractures. K. Speed, Chicago.—p. 414.
Mesenteric Cysts. R. A. Milliken, Indianapolis.—p. 417.

Iowa State Medical Society Journal, Des Moines

14: 529-572 (Dec. 10) 1924

Twenty Centuries of Pseudoscience. M. B. Call, Greene.—p. 532.
Peptic Ulcer. E. L. Wurtzer, Clear Lake.—p. 536.
Treatment of Pulmonary Tuberculosis. J. W. Kime, Fort Dodge.—p. 541.
Treatment of Syphilis. H. W. Scott, Iowa City.—p. 544.
Problems in Diagnosis. C. M. Wray, Iowa Falls.—p. 545.
Injuries to Carpal Bones. G. N. Wassom, Oelwein.—p. 548.
Torsion of Omentum. E. D. Allen, Hampton.—p. 549.
Syphilis in Surgery. E. D. Tomkins, Clarion.—p. 552.
Metallic Poisoning and Treatment. R. E. Jameson, Davenport.—p. 555.
Cooperation of Specialists. G. F. Harkness, Davenport.—p. 556.

Journal of Infectious Diseases, Chicago

35: 519-616 (Dec.) 1924

Fractionation of Iso-Electric Ambceptor Pseudoglobulin by Electrodialysis. A. Loeb and E. Hirsch, Chicago.—p. 519.
*Surface Tension of Culture Mediums. M. S. Marshall, Lansing, Mich.—p. 526.
Specific "Residue Antigens" of Different Types of Meningococci. F. Praussnyski, Washington, D. C.—p. 537.
*Practical Results with Flocculation Test for Syphilis. C. B. McGlumphy, Chicago.—p. 540.
*Immunologic Significance of Vitamins. V. Resistance of Avitaminic Albino Rat to Diphtheria Toxin; Production of Antitoxin and Blood Pressure Effect. C. H. Werkman, F. M. Baldwin and V. E. Nelson, Ames, Iowa.—p. 549.
*Germicidal Properties of Chemically Pure Soaps. J. E. Walker, Hot Springs, Ark.—p. 557.
*Permeability of Rabbit Placenta to Precipitins and to Typhoid Agglutinins. M. F. Guyer and E. A. Smith, Madison, Wis.—p. 567.
*How Salt Preserves. G. E. Rockwell and E. G. Ebertz, Cincinnati.—p. 573.
Effect of Cl. Sporogenes on Cl. Botulinum. E. O. Jordan and G. M. Dack, Chicago.—p. 576.
Improved Method of Anaerobic Cultures. G. E. Rockwell, Cincinnati.—p. 581.
*Identification of Rocky Mountain Spotted Fever Organism in Blood. Connor, Boston.—p. 587.
*Chancroidal Infection. C. C. Saelhof, Chicago.—p. 591.
Twort-D'Herelle Phenomenon. Resemblance of Bacteriophage to Toxins and Ferments. L. Arnold and E. Weiss, Chicago.—p. 603.

Surface Tension of Culture Mediums.—Marshall presents experimental data relative to the surface tension of mediums of different surface tension. Organisms growing in mediums with different surface tensions appear to have different rates of growth, and different gas metabolisms. Correlation of these variables, however, reveals no systematic variation.

Flocculation Test for Syphilis.—McGlumphy states that the results of the Wassermann and his flocculation test agree in more than 95 per cent. of serums. The Wassermann test is more sensitive than the flocculation method, but it gives more false positive reactions. A small percentage of syphilitic serums give a negative Wassermann and a positive flocculation reaction. False positive flocculation reactions do not occur when a highly concentrated antigen is added to nonsyphilitic serums. The results obtained with antigens prepared from human, beef and horse heart are in agreement.

Effect of Diphtheria Toxin on Avitaminic Rats.—This paper, by Werkman, Baldwin and Nelson is a study of the effect of diphtheria toxin on avitaminic albino rats; their resistance to toxin injections, their ability to react by the production of antitoxin, and the effect of the toxin on the blood pressure of avitaminic B rats and normal controls.

Germicidal Properties of Chemically Pure Soaps.—Soaps prepared from pure fatty acids were found by Walker to differ markedly in their germicidal properties, although sodium and potassium soaps of the same fatty acid do not differ greatly in this respect. The lowermost members of the fatty acid series possess no limited or germicidal properties against the organisms tested. *Staphylococcus aureus* possesses marked resistance to the action of soaps, not being killed by any of them under the conditions of Walker's experiments. The pneumococcus shows marked susceptibility to the action of the laurates, oleates, linoleates and linolenate, being killed in fifteen minutes by a N/10,240 (approximately 1: 50,000) solution of sodium laurate. A 1 per cent. solution of phenol is required to kill under the same conditions. The streptococcus is killed by the same soaps as the pneumococcus although it does not possess the same extreme susceptibility. *Bacillus typhosus* is considerably more resistant to the action of soaps, although killed in fifteen minutes by twentieth to fortieth normal (1.5 to 0.5 per cent.) solutions of the soaps of the saturated acids, from lauric to

stearic inclusive. A 1 per cent. solution of phenol is also required to kill under similar conditions. On the other hand, *B. typhosus* is markedly resistant to the soaps of the unsaturated acids, despite the strong action of the latter on the pneumococcus and streptococcus. Hence, these soaps show marked selective activity for the pneumococcus and streptococcus. The soaps of myristic, palmitic and stearic acids kill the pneumococcus, streptococcus and typhoid bacillus in about the same concentration, and hence exhibit no marked selective action. The laurates, in that they are strongly germicidal toward the pneumococcus and streptococcus, and at the same time show definite germicidal properties toward the typhoid bacillus, seem to possess the most general action as germicides. The marked resistance of *Staphylococcus aureus*, however, limits the use of soaps as general antiseptics. In common with other germicides, soaps act best at higher temperatures. No attempt is made to explain the germicidal effect of soap solutions although it may possibly be related to their depressor effect on surface tension.

Permeability of Rabbit Placenta.—According to Guyer and Smith, the blood of fetal rabbits shows positive precipitin reactions toward proteins that have been injected into the mother. Likewise, the blood of fetal young of mothers that have been immunized to typhoid bacilli agglutinate typhoid bacilli. Precipitins do not dialyze through an ordinary collodion membrane nor does such antigen as normal sheep serum (with doubtful exceptions) pass through the normal rabbit placenta.

How Salt Preserves.—It is stated by Rockwell and Ebertz that the preserving of proteins with salt involves more than its dehydration effect, there being at least four factors, namely, dehydration, direct effect of chlorin ion, removal of oxygen, sensitization against carbon dioxid and interference with rapid aciton of proteolytic enzymes.

Identification of Rocky Mountain Spotted Fever Organism.—Connor states that the organism of Rocky Mountain spotted fever may be found in the blood and cell-free serum of infected guinea-pigs by dilution and prolonged centrifugation. Staining for more than four hours in Giemsa's stain, and differentiation in 95 per cent. alcohol seem necessary to bring it out properly. The organism may be found by recovering infected blood from the peritoneum of a normal guinea-pig two days after intraperitoneal inoculation. The fact that it has been found in the blood and serum does not completely dispense with speculation as to the real form of the organism in this situation. The small numbers found may be present from broken-down cells, and be quite accidental and transient. The unusual virulence of the blood (0.001 c.c. often being infectious) seems somewhat incompatible with the exceedingly small number of organisms found.

Chancroidal Infection.—The Ducrey bacillus was isolated and cultivated by Saelhof in 65 per cent. of clinical chancroids. Two strains of a streptobacillus having the morphologic and cultural characteristics of the Ducrey bacillus were isolated from the smegma of normal persons. In a limited number of instances, vaccines were apparently of no therapeutic value in the treatment of chancroidal infection. Production of experimental chancroid in the rabbit gave uniformly negative results. Intradermal inoculation of pure cultures of Ducrey bacillus in the monkey produced a shallow, undermined, crust-covered ulcer, smear preparations of which revealed the Ducrey bacillus.

Medical Journal and Record, New York

120: 577-628 (Dec. 17) 1924

Common Cold. H. Smith, New York.—p. 577.
Induced Increase in Leukocytes: Effects on Infection. B. Ferguson, Southampton, England.—p. 580.
Treatment of Diseases of Maxillary Sinus from Viewpoint of Dentist. B. J. Cipe, Mount Vernon, N. Y.—p. 582.
Influence of Roentgen Rays on Endocrine Glands, Rejuvenation in Women. H. Benjamin, New York.—p. 585.
Effect of Ultraviolet Light on Blood Chemistry. D. McCaskey, New York.—p. 589.
Closure of Bronchial Fistula of Twelve Years' Standing by Use of Radium. W. L. Harris, Providence, R. I.—p. 590.
Hydrophobia and Carriers. B. R. Bey, Cairo, Egypt.—p. 591.
Decholesterinization. A. N. Tasher, Washington, D. C.—p. 595.
Allergic High Blood Pressure and Its Control by Epinephrin. I. S. Kahn, San Antonio, Texas.—p. 596.
Iodin in Treatment of Hyperthyroidism. J. A. Buchanan, Brooklyn.—p. 599.
Bismuth in Treatment of Syphilis. H. J. Schwartz and O. L. Levin, New York.—p. 600.
Adenoids in Infancy: Importance of Early Treatment. W. W. Carter, New York.—p. 604.

SUPPLEMENT

Conservation of Hearing in Suppurative Middle Ear Diseases of Childhood. R. Almour, New York.—p. clxxviii.
Acute Intussusception in Infants. R. L. Gibbon, Charlotte, N. C.—p. clxxx.
Doses for Children. A. D. Bush, Georgia.—p. clxxxiv.
Simple Goiter in Children. A. S. Wilner, New York.—p. clxxxv.
Pyelitis in Infants and Children. A. Hymanson, New York.—p. cxc.
Simple Method of Preparing Lactic Acid Milk. M. B. Brahdy, New York.—p. cxci.
Galen's Commentaries on Kidney Disease. J. Wright, Pleasantville, N. Y.—p. cxciv.

Medicine, Baltimore

3: 417-479 (Nov.) 1924

Alterations of Intrapleural Pressure and Their Significance. E. A. Graham, St. Louis.—p. 417.
*Etiology and Prevention of Simple Goiter. D. Marine, New York.—p. 453.

Prevention of Simple Goiter.—The factors which cause simple goiter, Marine says, center about the supply of iodin and the needs, normal and abnormal, of the thyroid gland for iodin. Supplying this element in an amount that roughly could be considered as approximating the physiological demand has resulted in preventing simple goiter in both man and animals and in preventing cretinism in animals. Iodin is effective when administered in any form or by any means: by inhalation, by mouth, by application to the skin or by injection. The ideal plan of administration is still to be worked out. Iodin containing salt was the first means of administration and Marine is of the opinion that ultimately it will prove the best means of administration when the entire population is to be protected. Sea salt or a salt containing 2 to 5 mg. of iodin per kilogram, if used exclusively would seem ample in the districts where endemic goiter is not very prevalent. If applied to the school population only, the Swiss plan of giving tablets containing 5 to 10 mg. at weekly intervals is more convenient and quite sufficient for prevention. Desiccated thyroid is theoretically a better prophylactic than iodin but practically it is too dangerous a drug to be recommended at present.

Michigan State Medical Society Journal, Grand Rapids

23: 503-568 (Dec.) 1924

Drive of Civilization, Disease and Decadence. J. R. Eastman, Indianapolis.—p. 503.
Infantile Tetany; Case. E. P. Russell, Ann Arbor.—p. 509.
Hemolytic Jaundice. C. D. Aaron, Detroit.—p. 513.
Obstetric Analgesia and Anesthesia; Evaluation of Various Methods. C. H. Davis and R. S. Cron, Milwaukee.—p. 517.
Advanced Cancer of Cervix Treated with Heat and "Starvation Ligature." G. Van A. Brown, Detroit.—p. 520.
Important Factors Influencing the Medical Practice of Today. E. L. Eggleston, Battle Creek.—p. 527.
Sex Gland Transplantation. M. Thorek, Chicago.—p. 532.
Jaundice. M. A. Blankenhorn, Cleveland.—p. 539.
Resuscitation from Electric Shock. W. L. Finton, Jackson.—p. 544.

Military Surgeon, Washington, D. C.

56: 553-680 (Nov.) 1924

Medical Service of Third German Army in Battle of Marne. Bulius.—p. 553.
Experience of U. S. Navy in Prevention and Control of Venereal Disease During and Since World War. R. F. Jones.—p. 568.
Dreyer Method for Determination of Physical Fitness. J. M. Swan, Rochester, N. Y.—p. 575.
Word Association Test. I. F. Peak.—p. 586.
Negative Blood Cultures in Subacute Bacterial Endocarditis: Two Cases. J. S. Simmons and S. L. Van Valzah.—p. 599.
Military Delinquency. E. King.—p. 604.
Standardization of Biologic Stains. R. E. Scott and R. W. French.—p. 607.
Medical and Scientific Libraries of Washington. W. O. Owen.—p. 625.
Tuberculosis as War Problem. P. P. Jacobs.—p. 630.
Modern Conception and Rational Treatment of Diabetes Mellitus. J. R. Darnall.—p. 650.
Kahn Precipitation Test Compared with Wassermann. E. Blackshear.—p. 662.

Minnesota Medicine, St. Paul

7: 753-844 (Dec.) 1924

Behavior of Testis Under Varying Experimental Conditions and Puncture of Scrotum; Transplantation, Cryptorchidism, Vasectomy. C. R. Moore, Chicago.—p. 753.
*Diagnosis and Treatment of Nephritis in Children. F. W. Schlutz, Minneapolis.—p. 761.
Cutaneous Lesions of Late Syphilis. P. A. O'Leary, Rochester, Minn. —p. 766.
Clinical Ocular Tuberculosis. J. F. Fulton, St. Paul.—p. 773.
Periodic Physical Examinations. H. W. Cook, Minneapolis.—p. 777.
Indications and Treatment of Acute Suppurative Mastoiditis. C. L. Larsen, St. Paul.—p. 781.
*Fractures of Hip. M. S. Henderson, Rochester, Minn.—p. 786.
Some Phases of Epilepsy. E. M. Hammes, St. Paul.—p. 792.
Common Cold. F. W. Briggs, Duluth, Minn.—p. 797.
*Blood Chemistry of Osteogenesis Imperfecta. A. E. Flagstad, E. Zanger and L. Leven, St. Paul.—p. 800.

Treatment of Nephritis in Children.—In the treatment of the nephritides of children, Schlutz says two principles must govern. The kidney must be spared as much as possible, and care must be taken to prevent accumulation of waste products in the blood and tissues. In the diet just two factors must be considered—the protein and the salt content. These substances pass only through the kidney. If the kidney function is inadequate, the partial or complete retention of these substances or their end products causes trouble. As a general rule, it is not well to restrict fluid intake. It may be useful in cases with pronounced edema. The acute hemorrhagic type would do badly unless large amounts of fluid were given. It is generally safe to give as much water as the kidney can take care of. If the urinary output approaches approximately two thirds of the water intake, conditions are satisfactory. Even in severe cases of edema, the amount of fluid given should not be below 10 or 12 ounces per day. This amount must be regarded as a minimum requirement. Purging and sweating are good and useful measures, if not carried to excess. Drugs are not very helpful in the treatment of nephritis in childhood. Some of them, for example the saline diuretics, may even be harmful. Diuretic drugs are always contraindicated if there is much hemorrhage. Complete rest in bed is essential during any acute stage of the nephritis and absolutely necessary in any case showing edema. The moment the disease is recognized, any possible focal infection should be localized and cleared up if possible. The prognosis in the nephritides of childhood is uniformly good. Most cases recover within six or twelve weeks. The kidneys apparently can recover their function entirely.

Treatment of Fractures of Hip.—While fractures of the hip do not give the high percentage of good results that other fractures do, yet in Henderson's experience they respond well to treatment. They should be reduced and held in position until healing occurs, at least three months, with no weight bearing for at least six months. The abduction method, advocated by Whitman, has a sound basis. The teaching that nonunion is to be expected is in the discard. Careful examinations checked up by measurements and roentgen-ray examinations at the time of injury will prevent many mistakes. Reexamination clinically, at frequent intervals, if roentgenograms are not made, will reveal the case in which the impaction breaks down. In case of nonunion, the bone pegging operation, preferably using the fibula, is the most efficacious. When the neck of the femur is practically gone, the reconstruction operations of Brackett and Whitman should be considered. It should be remembered, however, that firm fibrous union in some instances is quite adequate for the demands of function in the declining years of life. Each patient with nonunion of the hip presents a problem that can only be solved by individual study.

Blood Chemistry of Osteogenesis Imperfecta.—A number of determinations were run by Flagstad, Zanger and Leven on three cases of osteogenesis imperfecta, arthritis deformans (two cases), arthrogryposis congenitalis multiplex (one case), rickets (one case), and von Recklinghausen's disease (one case). Excepting rickets, there appears to be no significant change in the phosphorus content of the blood. In the case of rickets, two determinations on blood taken at different times showed low phosphorus values consistently. In the three cases of osteogenesis imperfecta, the phosphorus and calcium were again determined after the patients had been put on a bone meal diet for a period of one month. There was some variation in the phosphorus content, but no significant increase. The values for uric acid, creatinin, urea, total nonprotein nitrogen, and sugar were within normal limits. Although the urea and total nonprotein nitrogen values were on some occasions, higher than usual, it could not be regarded as a retention.

Northwest Medicine, Seattle

23: 540-588 (Dec.) 1924

Renal Functional Tests for General Practitioner. P. S. Hench, Rochester, Minn.—p. 540.
*Kahn Precipitation Test as Routine Test for Syphilis. W. Levin, Portland.—p. 543.
Cures, Cults, Pads and Quacks. W. H. Stephan, Dillon, Mont.—p. 547.
Roentgen-Ray Treatment of Toxic Goiter. J. H. Bridenbaugh, Billings, Mont.—p. 550.
Osteogenesis Imperfecta. H. H. Skinner, Yakima, Wash.—p. 552.
Extrapleural Pneumolysis in Treatment of Lung Abscess. T. W. Buschmann, Seattle.—p. 556.
Exostosis on Body of Axis Causes Death by Bulbar Paralysis. E. F. Chase, Seattle.—p. 560.
Retroperitoneal Tumor. W. C. Kintner, K. Winslow and L. W. Whitlow, Seattle.—p. 561.
Surgery of Biliary Tract in Presence of Jaundice. R. G. Andres, Spokane.—p. 563.
Uteroovarial Ligaments. A. P. Duryee, Everett, Wash.—p. 567.
Denuce Method of Reduction of Congenital Dislocation of Hip. H. E. Coe, Seattle.—p. 569.
Eczemas of Infancy and Childhood. G. Closson, Seattle.—p. 572.

Kahn Test Preferred.—Parallel Kahn and Wassermann tests made on 2,542 blood specimens submitted to the Oregon State Board of Health Laboratory showed complete agreement in 92.2 per cent., fair agreement in 2.3 per cent. and complete disagreement in 5.5 per cent. The Kahn test was more sensitive than the Wassermann test in seventy-one treated cases for which reacting tests gave twenty-six negative Wassermann tests, while forty-five Wassermann reacting tests gave sixteen negative Kahn tests.

Philippine Journal of Science, Manila

25: 391-537 (Oct.) 1924

Diptera Pupipara from Philippines. G. F. Ferris.—p. 391.
Recovery of Fusel Oil in Philippines. H. E. Foote.—p. 405.
Poisonous and Worthless Fishes. Philippine Plectognaths. A. W. C. T. Herre.—p. 415.
Some Departures from Typical Cell Picture of Bacillary and Amebic Dysentery; Their Significance. I. Post-Bacillary Exudates, Presence of Eosinophils in Intestinal Allergy. F. G. Haughwout.—p. 513.

Tennessee State Medical Association Journal, Nashville

17: 211-245 (Nov.) 1924

What Is the Future of Medical Practice? H. H. Shoulders, Nashville. —p. 211.
Intestinal Anastomosis. R. A. Barr, Nashville.—p. 217.
Treatment of Chronic Arthritis Other Than Removal of Cause. G. K. Carpenter, Nashville.—p. 224.
Indigestion. L. Motley, Dyersburg, Tenn.—p. 227.
Blood Chemistry. J. J. Waller, Oliver Springs, Tenn.—p. 231.
Ectopic Pregnancy. R. W. Grizzard, Nashville.—p. 234.

Texas State Journal of Medicine, Ft. Worth

20: 420-468 (Dec.) 1924

Tuberculoma of Spinal Cord. T. H. Harris and G. Milliken, Galveston. —p. 427.
Neuroretinitis: Case. W. M. Knowles, Dallas.—p. 429.
Roentgen-Ray Treatment of Carcinoma of Uterus. R. T. Wilson, Temple. —p. 431.
Renal Calculus. E. S. Judd and A. J. Scholl, Rochester, Minn.—p. 434.
Diseases of Kidney and Hypertonia. C. M. Grigsby, Dallas.—p. 440.
Mosquito Control Along Texas-Mexican Border; Control of Aedes Aegypti. R. E. Tarbett, El Paso.—p. 442.
Plea for Skin-Grafting. C. S. Woodward, Fort Worth.—p. 445.
Compulsory Vaccination. J. W. Tappan, El Paso.—p. 446.
Importance of Reporting Communicable Diseases. J. E. Steele, Austin. —p. 451.
Mental Hygiene of Childhood. E. W. Applebe, Houston.—p. 453.
Dilatable Aorta. J. S. Lankford, San Antonio.—p. 455.

West Virginia Medical Journal, Huntington

20: 617-671 (Dec.) 1924

Primary Syphilis; Diagnosis. R. Ruedemann, Huntington.—p. 617.
Syphilis; Surgical Aspects. A. G. Rutherford, Welch.—p. 625.
Syphilis in Relation to Bone and Joint Pathology. E. B. Henson, Charleston.—p. 631.
Syphilis. A. L. Jones, Wheeling.—p. 633.
Treatment of Syphilis. E. W. Horton, Bluefield.—p. 637.
Kahn Precipitation Reaction in Diagnosis of Syphilis. W. M. Sheppe and I. C. Rogers, Wheeling.—p. 639.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2: 1145-1184 (Dec. 20) 1924

*Surgery in Treatment of Pulmonary Tuberculosis. H. M. Davies. —p. 1145.
Purulent Pneumococcic Pericarditis: Pericardiotomy: Recovery. A. J. Hall and V. Townrow.—p. 1146.
*Early Pregnancy and Epithelioma. C. W. A. Emery.—p. 1149.
Compression Paraplegia. A. Feiling.—p. 1150.
*Quantitative Observation of Kernig's Sign by Wheel Goniometer. F. C. Eve.—p. 1159.
Criteria of Transmission and Cultivation of Encephalitis and Allied Viruses. J. E. McCartney.—p. 1159.
Hydremic Nephritis. R. O. Adamson.—p. 1162.
*Perforated Gastric Ulcer. A. C. Maconie.—p. 1162.
*Submucous Lipoma of Cecum. W. G. Nash.—p. 1162.

Apicolysis and Thoracotomy in Pulmonary Tuberculosis.—Apicolysis, that is, artificial collapse of the upper part of the lung by mesial displacement of it together with the parietal pleura, this layer of pleura having been stripped off the inner surface of the chest and the space thus formed being filled up by some foreign body, such as paraffin, fat fibroids, muscle, etc., has been done by Davies in seven cases with good results in four cases. The remaining three cases were benefited. Out of twenty-five thoracoplasties done for bronchiectasis and tuberculosis, twenty were for the latter condition. Of these, 7 patients have become free from symptoms, five are considerably improved, while four, still under treatment, bid fair to come under the "free from symptoms" group. One patient died of tuberculous enteritis eleven months after the operation. One died immediately after the operation. That case was complicated by a pyopneumothorax.

Lack of Fat in Tissues Predisposes to Epithelioma.—Emery holds the view that the conditions prevailing in the first three months of pregnancy assist in a study of the etiology and treatment of epithelioma. There is no other normal condition in which one tissue, if it does not definitely attack, at least invades another. The body tissues are prepared to, and normally can, resist the growth of an epithelioma, and if the tissues are prepared against this particular growth they will resist any invading growth, whether malignant or not. Overproduction of secretion results in completely antidoting resistance, and so invasion continues wildly. The action of lutein secretion in lowering or countering body resistance explains the preponderance in women of cancer cases under the age of 40, as compared with men under that age. The epithelioid character of the lutein cells and the fact that they contain a lipoid substance is important when it is remembered that the body is prepared to resist an attack by epithelial cells. Emery asserts that in the body generally epithelioma does not grow where there is an unadulterated layer of fat below epithelium. The commonest sites for epitheliomas are to be found where the epithelium comes into direct contact with mixed muscular or fibromuscular tissue, for example, in lip, tongue cervix uteri, and following dissolution of continuity of a fatty layer by wounds, ulcers, burns, etc. The only area which the body normally prepares for the reception of invading cells (chorionic epithelium) does not possess a fat layer. Fat, therefore, is protective. Muscular tissue, especially mixed muscular and fibrous tissue, has some property which makes it a very receptive medium for proliferating epithelium. That epithelial and lipoid substances come so much into evidence in early pregnancy and produce some form of reaction on the part of the body, and that the fat of the body ordinarily exercises a protective action, are very important points. The close relationship of fat and epithelium in the body generally and the epithelial and lipoid nature of the lutein cells suggests that either fat alone, or some interaction between the two provides the blood with its resisting powers; or, again, that the fat in itself provides both mechanical protection and the resisting powers to the blood normally, and that, in a finer and more intimate form, in the lutein cell epithelial and lipoid substances evolve an antidote to that resistance.

Measuring Kernig's Sign with Goniometer.—The goniometer is used by Eve to measure the angle of flexion of the knee when the leg is elevated as for the elicitation of Kernig's sign. It should be about 90 degrees. In meningitis it may be far less, perhaps 45 degrees. In sciatica, the knee of the affected limb flexes sooner than the sound one. This is another way of eliciting Eve's variant of Kernig's sign.

Atypical Gastric Ulcer with Perforation.—Maconie relates a case of perforation of a gastric ulcer, with general peritonitis, in a boy, aged 16, with no past history suggesting gastric trouble, and with atypical physical signs. The patient gave a history of pain of two days' duration extending transversely across the abdomen at the level of the umbilicus. There was no past history of abdominal pain. The point of maximum pain was slightly to the left of the umbilicus. There was no epigastric tenderness; both iliac fossae were tender, especially the left. There was tenderness on rectal examination, greater on the left side. A provisional diagnosis of acute appendicitis was made. Beyond sharing in the general peritoneal injection, the appendix was normal. A small perforation, surrounded by an extensive indurated area, was found on the anterior surface of the stomach, just below the junction of the middle and right thirds of the lesser curvature.

Submucous Lipoma of Cecum.—The history in Nash's case was that six months previously the patient had had an attack of diarrhea, followed by attacks of abdominal pain and severe constipation. One week before admission she had severe colicky pain and vomiting. On admission she had definite tenderness and rigidity in the right lower quadrant of the abdomen. The abdomen was opened. The appendix was thickened, but not inflamed. The cecum, which felt as if it contained a mass of worms, was opened and a submucous lipoma found projecting on the posterior wall.

Calcutta Medical Journal

2: 147-177 (Oct.) 1924

Teaching Medicine in Calcutta University. A. C. Ukil.—p. 147.
Gynecologic Diagnosis and Treatment in General Practice. B. B. Shattacharyya.—p. 152.

Journal of Hygiene, London

23: 1-116 (Sept.) 1924

Fermentation of Salts of Organic Acids as Aid to Differentiation of Bacterial Types. H. C. Brown, J. T. Duncan and T. A. Henry.—p. 1.
Growth of Meningococci in Vitro in Relation to Virulence. E. G. D. Murray and R. Ayrton.—p. 23.
*Bacteriology of Human Milk. L. S. Dudgeon and R. C. Jewesbury. —p. 64.
Influence of Carbohydrates on Hydrogen Sulphid Production by Bacillus Aertrycke (Mutton). H. Heap and B. H. E. Cadness.—p. 77.
Enteritis Due to B. Dysenteriae Sonne. J. Smith.—p. 94.
Respective Influences of Temperature and Moisture on Survival of Rat Flea (Xenopsylla Cheopis) Away from Its Host. A. W. Bacot and C. J. Martin.—p. 98.
*Bacteriologic Examinations of Feces in Four Cases of Typhoid. L. P. Lockhart.—p. 106.

Bacteriology of Human Milk.—Streptococci were isolated by Dudgeon and Jewesbury from 49 per cent. of the samples of human milks. Only 2 per cent. of these streptococci in human milk is regarded as an indication of a pathologic process in the breast, although the number of streptococci present in milks with a high polymorphonuclear count was greater than in the normal milk. The hemolytic streptococci were not associated with any apparent abnormal condition in mothers and infants. *B. coli* strains were isolated from ten cases. In four out of the ten cases polymorphs were abundant in the milk. There was no evidence of ill health in the infants fed on these milks. Normal human milk may contain *Staphylococcus albus, S. aureus,* streptococci or *B. coli.* The commonest organism is *S. albus.* Actual pus may be present in milk, before there is clinical evidence of mastitis. The bacteriologic flora of an infant's feces may serve as a definite indication of the bacterial content of the mother's milk.

Examination of Typhoid Stool.—The appearance and disappearance of typhoid bacilli in the feces in the four cases examined by Lockhart bore no relation to changes in the diet nor to the physical state of the stools, but the later they appeared the shorter was the duration of their appearance. On the disappearance of typhoid bacilli from the stools the

intestinal flora tended to become more simple. *B. coli* was the only organism invariably present at every examination. Streptococci were very much more abundant in the earlier stages of the disease, when milk formed the greater part of the diet, than in the later stages. In two cases in which boils occurred on the body the causative organism had previously been isolated in large numbers from the feces. With stools slightly alkaline to litmus the flora in these cases was relatively simple and fermentative in type. There is no apparent advantage, therefore, in giving a high carbohydrate diet, except in cases of marked alkalinity and putrefaction.

Lancet, London

2: 1267-1322 (Dec. 20) 1924

*Fate of Bulbus Cordis in Human Heart. A. Keith.—p. 1267.
English Psychiatry: New Lamps for Old. E. Goodall.—p. 1273.
Amebic Hepatic Abscess Treated with Emetin Only. V. S. Hodson.—p. 1275.
Hypoglycemia. P. J. Cammidge.—p. 1277.
Case of Latent Nasal Accessory Sinus Disease, with Mental and Visual Impairment; Operation; Recovery. E. Watson-Williams.—p. 1280.

Fate of Bulbus Cordis in Human Heart.—Evidence is given by Keith which seems to demonstrate that the infundibulum of the right ventricle must be regarded as a distinct constituent of the heart. A survey of the anatomy of the infundibulum shows that, although its cavity is now merged into that of the right ventricle, yet its limits can still be identified. The evidence which is still lacking relates to the exact function of this part of the heart. The evidence of comparative anatomy leads one to regard it as serving as a safety mechanism for the pulmonary circulation. As the systolic pressure rises, the valvular mechanism of the bulbus shuts off the pulmonary circulation, thus safeguarding the vascular network of the lungs. The infundibular chamber and its musculature probably only come into effective action during periods of great exertion and stress. At rest the right ventricle of a man pumps about 3 liters of blood into the lungs per minute, but in periods of stress, the output may rise to 30 liters per minute. In such conditions of cardiac stress the cavity of the infundibulum intervenes between the driving power of the right ventricle and the pulmonary circulation, and exercises a moderating influence.

Medical Journal of Australia, Sydney

11: 541-566 (Nov. 22) 1924

Spahlinger Treatment of Tuberculosis. D. Hardie.—p. 541.
Malignant Disease of Uterus. M. Wanliss.—p. 543.
Köhler's Disease: Case. H. R. Hodgkinson and L. S. Duke.—p. 553.
Remote Results of "Gassing." A. Stewart.—p. 554.
Case of Tick Paralysis. H. St. L. Mees.—p. 556.

Quarterly Journal of Medicine, Oxford

69: 1-130 (Oct.) 1924

*Effect of Iodin on Hyperthyroidism. S. J. Cowell and E. Mellanby.—p. 1.
*Van den Bergh's Test in Jaundice. C. H. Andrewes.—p. 19.
*Relation Between Basal Metabolic Rate and Pulse Pressure in Conditions of Disturbed Thyroid Function. H. W. Davies and J. Eason.—p. 36.
*Factors Concerned in Etiology of Tetany in Children. G. H. Anderson and S. Graham.—p. 62.
*Pathology of Nephritis Associated with Edema. S. C. Dyke—p. 77.
Spontaneous Subarachnoid Hemorrhage. S. P. Symonds.—p. 93.
*Cholesterol in Blood in Cases of Gallstones. J. M. H. Campbell.—p. 123.

Effect of Iodin on Hyperthyroidism.—The relationship between the iodin content of the thyroid and the occurrence of the symptoms of hyperthyroidism in man is discussed by Cowell and Mellanby. Iodin was administered in the form of potassium iodid. Small doses of iodids are shown to produce a lowering of the basal metabolic rate and distinct clinical improvement in patients suffering from hyperthyroidism. As regards the immediate results, this improvement reaches a maximum in from ten to twenty days after the beginning of iodid administration, and is then frequently followed by a gradual return of the symptoms, which do not, as a rule, attain their former severity. The withdrawal of iodid from patients who have been receiving it continuously for several months is followed by an exacerbation of symptoms which can be relieved by once more administering iodid. Treatment of cases of hyperthyroidism of all types by iodids is recommended as an adjunct to other forms of medical treatment, and it is suggested that a course of iodid administration should prove of value as a preliminary to any surgical treatment of these cases that may be contemplated.

Value of Van den Bergh's Test in Jaundice.—Andrewes' study has convinced him that Van den Bergh's test has a considerable clinical value as a method of quantitative estimation of bilirubin in the blood. It enables one to follow the progress of jaundice quantitatively and to detect it when latent. With its aid one may distinguish a pernicious from a secondary anemia. Frankly hemolytic jaundice can be distinguished from frankly obstructive jaundice by means of the test, but as a means of differentiating icterus due to liver cell damage from other types of jaundice the value of the method is slight. Theoretical reasons are put forward why liver cell damage should be able to cause either the direct or indirect diazo reaction. There is a kidney threshold for direct bilirubin corresponding to 3.5 or 4 units of bilirubin in the blood. Some slight individual variation occurs.

Increased Pulse Pressure in Hyperthyroidism.—One hundred and thirty-eight complete consecutive observations on thyroid cases were made by Davies and Eason. They found that increase of pulse pressure is characteristic of and a constituent of the group of signs and symptoms known as hyperthyroidism. Diminution of pulse pressure is characteristic of uncomplicated hypothyroidism. Pulse pressure and basal metabolic rate therefore vary in the same direction. Analysis of the findings in the 150 observations on pulse pressure and basal metabolic rate shows a considerable degree of correlation between these two factors in cases of normal and disordered thyroid function. A considerable amount of further work is necessary before the reasons can be given fully for this relation between pulse pressure and basal metabolic rate. Various complicating factors may disturb the relationship, but the measurement of the pulse pressure is, nevertheless, a simple means for controlling the findings of the basal metabolic rate. Serial measurements of the pulse pressure made from time to time under basal conditions in cases of disordered thyroid function give important data that are easily recorded and interpreted for clinical purposes.

Blood Serum Calcium in Tetany.—Anderson and Graham assert that active tetany is always accompanied by a diminished calcium content of the serum. The severity of the tetany, however, bears no relation to the diminution of the calcium. Latent tetany may or may not be accompanied by a low calcium content of the serum. The production of acidosis invariably leads to the disappearance of the signs of tetany, irrespective of a rise in the calcium content of the serum. The carbon dioxid combining power of the venous plasma is within normal limits in infantile tetany.

Pathology of Nephritis with Edema.—Six cases of nephritis of subacute parenchymatous type all associated with intense edema, are described by Dyke in respect of clinical features and response to certain tests of renal function during life and the pathology of the kidneys after death. Histologically, the kidneys in all cases showed both glomerular and tubular lesions. On the basis of the glomerular changes it was possible to divide the cases into two groups. In Group A the glomeruli showed more or less degeneration without marked morphologic change. These cases during life showed no urea retention or hypertension. In Group B the glomeruli showed gross morphologic changes, in two cases of an inflammatory nature, and in one due to "amyloid" change. These cases all showed increasing inability to excrete urea, and progressive hypertension. It is suggested that the healing process may, under favorable circumstances, be complete in cases of the type described under Group A, whereas in those of the type described under Group B it will tend to the production of the "secondarily contracted" kidney associated with azotemia and hypertension. The tubular lesions were the same in both Groups A and B, and consisted in degeneration of the epithelium, with deposition of masses of cholesterol esters. Attention is drawn to the fact that this deposition of cholesterol esters is the one histologic factor common to the kidneys in all cases of nephritis of hydremic type. The significance of this fact in relationship to the production of edema is briefly discussed.

Annales de l'Institut Pasteur, Paris

38: 953-1051 (Nov.) 1924

Coccidiosis of Rabbits. Pérard.—p. 953.
*Recurring Herpes of a Finger. Nicolau and Poincloux.—p. 977.
*Normal and Artificial Hemolysins. S. Mutermilch.—p. 1002.
*Lactic Fermentation in Presence of Mercuric Chlorid. A. Lumière. —p. 1045.

Recurring Herpes of a Finger.—Nicolau and Poincloux observed a case of herpes recurring on a finger which had been exposed to pressure and was callous. Inoculations in rabbits showed only slight neurotropism at first. In a later attack, which was connected with slight signs of encephalitis, the virus proved neurotropic.

Normal and Artificial Hemolysins.—Mutermilch states that the erythrocytes in one of a hundred sheep tested were not laked by normal human serum nor by an antiserum against Forssman's antigen. They were dissolved by artificial hemolytic serums equally as well as corpuscles from normal sheep. They were also dissolved by serums prepared with injections of organs of the rabbit type. He concludes from this and his absorption experiments that receptors for normal and artificial lysins are different. Nonspecific protein therapy may enhance the formation of the natural antibodies.

Lactic Fermentation in Presence of Mercuric Chlorid.—Lumière found that the cause of irregularities in lactic fermentation in the presence of small amounts of mercuric chlorid is the formation of precipitates which inclose various amounts of germs. When he took care to add exact amounts of homogeneous emulsions, the fermentation was identical in every tube.

Archives des Maladies du Cœur, etc., Paris

17: 673-736 (Nov.) 1924

*Intermittent Claudication with Angina Pectoris. J. Heitz.—p. 673.
*Action of Pilocarpin on Cardiovascular System. Laubry et al.—p. 709.

Causal Factor in Intermittent Claudication with Angina Pectoris.—Heitz investigated twelve cases of intermittent claudication coexisting with angina pectoris, in eleven men and one woman. He asserts that both phenomena are produced by vasomotor changes in the coronary and tibial arteries. But ischemia is not the only factor. Distention of the artery and stretching of the corresponding periarterial sympathetic network is also a cause, especially the distention of the artery above the spasm constricting it.

Action of Pilocarpin on Cardiovascular System.—Laubry, Oury and Tecon examined the action of pilocarpin on sixteen patients with well compensated cardiovascular disease. It reduced the arterial tension in eight and increased it in eight, the increase being usually less pronounced than the decrease. The action was manifest in five minutes after subcutaneous injection of 0.01 gm. of pilocarpin hydrochlorid, and persisted from sixty to seventy-five minutes. The effect of pilocarpin on the vagosympathetic system may possibly be utilized in different functional affections of this system.

17: 735-798 (Dec.) 1924

*Egg-Shaped Left Ventricle. E. Bordet and E. Géraudel.—p. 735.
*Etiology of Adams-Stokes Disease. G. Bickel.—p. 744.
*"Soft Heart." M. Magniel.—p. 749.

Case of "Egg-Shaped" Left Ventricle.—Bordet and Géraudel observed a case of extreme dilatation, egg-shaped, of the left ventricle in a young man with mitral and aortic defects. The orthodiagram corresponded to the necropsy findings.

Etiology of Adams-Stokes Disease.—Referring to seven patients with typical Adams-Stokes disease, Bickel declares that syphilis can be only seldom incriminated in the etiology. The Wassermann reaction was positive in one case, while in six others the syndrome was connected with a cardiovascular disorder.

"Soft Heart."—Magniel insists that a total hypertrophy of the heart is not a primary lesion. It may be caused by a chronic alcoholic intoxication, and resembles the picture of alcoholic myocarditis. The disturbance represents the type of a "soft heart," *cœur mou*, which may be found in workers at heavy manual labor, in alcoholics, in the obese, and with emphysema.

Archives de Médecine des Enfants, Paris

27: 713-798 (Dec.) 1924

*Treatment of Purulent Pleurisy. P. Woringer.—p. 713.
Chlorids in Cerebrospinal Fluid in Diagnosis of Meningitis. H. Nowicka.—p. 726.
Diffuse Poliomyelitis with Muscular Atrophy from Congenital Syphilis. P. Haushalter.—p. 739.
Case of Facial Hemihypertrophy. A. Léri and Sartre.—p. 747.
"Sunlight in Early Infancy." J. Comby.—p. 750.

Treatment of Purulent Pneumococcus Pleurisy.—Woringer used ethyl-hydrocuprein hydrochlorid successfully in five young children, and considers chemotherapy the proper procedure in early childhood, in which pleurotomy gives poor results. The efficacy of this drug is limited to the cases in which the pus contains only pneumococci. After sterilization of the pleura with it, recovery was rapid, with complete restoration of the pulmonary function even with empyema of long standing. After removal of all possible pus by puncture, 25 mg. of the ethyl-hydrocuprein hydrochlorid per kilogram of body weight, is injected, 0.5 gm. being the maximum dose. This intervention is repeated daily for three or four days, until the fever subsides. If the fever recurs, injections should again be made for two or three days.

Bulletin de l'Académie de Médecine, Paris

92: 1397-1468 (Dec. 16) 1924

Vaccinations in France and Algiers in 1923. L. Camus.—p. 1399.
The Antimalaria Campaign in Italy. Bernard and Marchoux.—p. 1453.
Exercise in Recuperation of Convalescents. Boigey.—p. 1461.
Test for Vitality of a Populace. R. Martial.—p. 1464.

92: 1469-1489 (Dec. 23) 1924

Twenty-First Congress of "Americanists." L. Capitan.—p. 1480.
*Test for p_H in Urine. H. Bierry and L. Lecœur.—p. 1484.
*Secretion in the Pituitary. R. Collin.—p. 1487.

Colorimetric Test for the p_H.—Bierry and Lecœur describe a simple and rapid technic for estimation of the p_H in the urine, by means of three dyes in pulverized form. The color of each, as dissolved in separate test tubes, corresponds to a definite p_H figure.

Secretory Function of the Pituitary.—On the basis of his histologic findings, Collin reiterates the secretory function of the pituitary gland. Its structure is that of an endocrine gland. The colloid substance which is produced by the pituitary is present in the anterior lobe, the pars intermedia and in the interstitial connective tissue. He was able to trace the colloid through the posterior lobe and the infundibulum up to the immediate neighborhood of the nerve cells of the tuber.

Bulletins de la Société Médicale des Hôpitaux, Paris

48: 1653-1668 (Nov. 28) 1924

"Gangrene with Pulmonary Tuberculosis." J. Huber.—p. 1653.
Mycosis Simulating Tuberculosis. Boidin and Potron.—p. 1654.
*Neurosyphilis Resembling Multiple Sclerosis. Sézary et al.—p. 1657.
*Tabes with Scleroderma. G. Guillain and J. Celice.—p. 1661.
*Capillaroscope. A. C. Guillaume.—p. 1663.
Methods for Estimation of the Blood Pressure. L. Rimbaud and P. Vallet.—p. 1666.

Syphilis Simulating Multiple Sclerosis.—Sézary, Dessaint and Jonesco observed a case of neurosyphilis in which the coexistence of spastic paraplegia, cerebellar disorder, atrophy of muscles, paresthesia and disturbed reflexes simulated multiple sclerosis in the man, aged 55. The differential diagnosis was suggested by anomalies in the superficial sensibility, of radicular origin. This occurs rarely in multiple sclerosis. The diagnosis was confirmed by examination of the cerebrospinal fluid.

Tabes Associated with Scleroderma.—Describing a case of this kind Guillain and Celice recall that scleroderma in certain cases may be of syphilitic origin.

Capillaroscopy.—Guillaume demonstrated an apparatus for clinical examination of the capillaries in man. It has a spectromicroscope and photomicrograph attachment.

48: 1669-1693 (Dec. 5) 1924

Significance of Changes in Sugar Content of Spinal Fluid. R. J. Weissenbach.—p. 1669.
*Phrenicotomy in Treatment of Bronchiectasis. E. Rist.—p. 1672.
Case of Polyneuritis Due to Injection of Tetanus Antitoxin. Souquest et al.—p. 1676.

Fatal Aneurin in Possible Mercuric Chlorid Poisoning. P. Menetrier and M. Derville.—p. 1677.
Adjustable Metal Constricting Band. Boulanger.—p. 1686.
*Treatment of Scarlet Fever. R. J. Weisenbach.—p. 1686.

Bronchiectasis Cured by Phrenicotomy.—Rist reports a case of bronchiectasis, consecutive to pneumonia, in a young man, cured by resection of 2 cm. of the right phrenic nerve. An artificial pneumothorax three years before had partially failed, as the pathologic lobe was adherent to the diaphragm. The recovery seems complete after four years of illness. A coexisting hypertrophic and painful pneumic osteo-arthropathy of the fingers, of the Marie type, disappeared with the general recovery.

Blood of Convalescent in Treatment of Scarlet Fever.—Weissenbach injected 25 c.c. of fresh, citrated blood from a convalescent in a case of scarlet fever in a boy long affected with chronic nephritis. The clinical picture of the disease, grave in the beginning, changed favorably in less than twenty-four hours after the injection, and complete recovery occurred in a few days. This treatment checked a possible action of the specific virus on the kidneys, and their condition actually improved under the influence of the bedrest and proper diet. The blood was from the mother and was injected about thirty-six hours after appearance of the eruption.

Encéphale, Paris

19: 617-680 (Dec.) 1924

*Case of Diffuse Perixial Encephalitis. Urechia et al.—p. 617.
Case of "Delirium of Compensation." Mignard and Montassut.—p. 628.
Heredity in Psychiatry. W. Boven.—p. 635.
*Nystagmoid Equivalents in Epilepsy. S. Messing.—p. 649.
Forms of Senile Dementia. J. Lhermitte and Nicolas.—p. 654.

Periaxial Encephalitis.—Urechia, Mihalescu and Elekes describe a case of what Schilder calls diffuse periaxial encephalitis. The patient was a man, aged 37. The disease started with symptoms of hypochondriac paranoia. Neurologic examination revealed changes in the pupils and the visual field, albuminosis in the spinal fluid, slight ataxia, disturbed reflexes, parkinsonism, also bronzing of the skin. The four photomicrographs show that the case corresponded to the inflammatory type, resembling multiple sclerosis more than a glioma. It is assumed that the infectious agent of the disease, which possesses a marked affinity for the white substance, is transmitted by the vessels.

Nystagmoid Equivalents in Epilepsy.—Messing treated a young epileptic girl, with seizures of both grand and petit mal type, also with frequent attacks of movements of the eyeballs resembling nystagmus, as epileptic equivalents. He assumes that the eye movements were caused by irritation of the lateral oculomotor center, situated in the eleventh convolution of the left hemisphere. The factor of irritation may be a postinflammatory scar in the meninges from some infectious disease in childhood. Intracranial insufflation exerted a favorable effect. The seizures became less frequent and shorter, with less impairment of consciousness; headaches disappeared, and the memory improved. The third insufflation had been made at the request of the patient.

Gynécologie et Obstétrique, Paris

20: 305-384 (Nov.) 1924

*Genital Tuberculosis and Childbirth. Fruhinsholz and Feuillade.—p. 305.
Fibroma with Rapid Cancerous Degeneration. De Rouville.—p. 327.
*Metrorrhagia in Appendicitis. E. Hitzanidès.—p. 329.
Roentgen-Ray Diagnosis in Obstetrics. Portes and Blanche.—p. 333.

Tuberculosis of Genitalia and Childbirth.—Fruhinsholz and Feuillade observed a full term pregnancy with normal delivery five years after a right salpingectomy for local tuberculosis, and cauterization of some small tuberculous lesions in the left ovary. In a second case, what seemed to be ordinary puerperal fever proved to be a genital tuberculous lesion requiring surgical treatment. In a third case, the "puerperal fever" was soon explained by a tuberculous peritonitis. They have compiled sixty cases of pregnancy with tuberculous lesions in the uterus or adnexa. The tuberculosis may remain a local affection during the pregnancy, or become generalized and cause a premature delivery. In cases of general tuberculosis observed during pregnancy or postpartum, invasion of the genitalia should be suspected with signs of puzzling infection. The necropsy findings in twelve cases are analyzed.

Metrorrhagia in Appendicitis.—Hitzanidès reports two cases of chronic appendicitis in women, aged 19 and 24, in which metrorrhagia was the principal symptom. The infection, inducing congestion of the pelvic organs, seems to have been responsible for the hemorrhages.

Journal d'Urologie Médicale et Chirurgicale, Paris

18: 281-360 (Oct.) 1924

*Elimination of Hexamethylenamin. G. Albano.—p. 281.
Results of Operations for Kidney Calculi. J. Ratschitsch.—p. 297.
Ultraviolet Rays in Urethritis. Dufestel and Lazard.—p. 303.
Cultivation of Semen in Diagnosis of Gonorrhea. L. Boulanger.—p. 311.
Case of Unilateral Double Kidney. J. Rejsek.—p. 317.
*Polypoid Lesion in Posterior Urethra. Busson and Danziger.—p. 323.
*Chancroid in Urethra. Saint-Cène.—p. 326.
*Treatment of Tuberculosis of Urinary Tract. H. Blanc.—p. 338.

Elimination of Hexamethylenamin in Kidney Insufficiency.—Research in this field is reported by Albano in three patients with chronic nephritis. A dose of 0.25 gm. of a 10 per cent. solution was injected intravenously. The results proved that a kidney with a marked insufficient functioning is still able to eliminate hexamethylenamin. The time required for elimination may be twice as long as in the healthy. Its concentration is low, and varies little.

Polypoid Bullous Edema in Bladder and Urethra.—With the urethroscope, an atypical form of polyposis was detected by Busson and Danziger in a man, aged 22. One application of high frequency current relieved the pains from which the patient had suffered for two years.

Case of Soft Chancre in the Urethra.—Saint-Cène reports a case of chancroid urethritis with a purulent discharge simulating a gonorrheal affection. Microscopic examination showed numerous Ducrey's bacilli, with no spirochetes or gonococci.

Methylene Blue in Tuberculosis of Urinary Tract.—Blanc recommends methylene blue as a good palliative in affections of this nature. Two pills, each 0.05 gm., are prescribed daily, taken at meals, during fifteen days. The treatment may be repeated after an interval of ten days. It should not interfere with a surgical intervention. He declares that hexamethylenamin is distinctly contraindicated.

Nourrisson, Paris

22: 369-446 (Nov.) 1924

Tuberculosis in Young Children. A. B. Marfan.—p. 369.
*Infectious Diseases in Twins. Levebouhet et al.—p. 392.
*Mild Leukemia in an Infant. E. N. Zelnster.—p. 396.
*Tongue Sign of Typhoid Fever. G. Salès and J. Debray.—p. 404.

Identical Course of Infectious Diseases in Twins.—Leréboullet, Saint-Girons and Denoyelle treated twin girls, aged 16 months, who were simultaneously affected with bronchopneumonia. The manifestations of serum sickness, following antipneumococcus serum therapy, appeared in both at the same time, and the intensity and duration of the symptoms were identical. The deaths were one day apart. They describe also a case of coinciding diphtheria in twin girls, 9 years old. The serum eruption and the complication of eye paralysis appeared in both simultaneously. The coincidence of symptoms in certain twins proves identical reactions to infections.

Aplastic Anemia in Infant.—The clinical picture and blood findings in an infant, aged 55 days (splenomegaly, hyperleukocytosis, myelemia) revealed a form of the disease intermediate between the Jaksch-Hayem type and myeloid leukemia. The Wassermann test was negative in the parents and infant; nevertheless, a combined iron, arsphenamin and mercurial treatment proved successful.

Tongue Sign in Typhoid Fever in Infants.—Salès and Debray emphasize the value of Marfan's tongue sign, namely, a coated tongue with a red triangle at the tip, in diagnosis of typhoid fever in infants. The tongue sign gave the clue in two cases in infants, while the spleen was normal, and neither diarrhea nor the eruption was pronounced. The serum reaction confirmed the diagnosis.

Paris Médical

505-532 (Dec. 20) 1924

Electricity and Ultraviolet Rays. E. and H. Biancani.—p. 505.
*Iodin Iontophoresis in Treatment of Scars. G. Bourguignon.—p. 515.
*Ultraviolet Rays in Rickets. Lesné and de Gennes.—p. 520.
*Ultraviolet Rays in Neuralgia and Neuritis. V. Lichnitzki.—p. 525.
"Haff Disease." Gaehlinger.—p. 529.

Iontophoresis in Treatment of Deforming or Adherent Scars.—Bourguignon obtained remarkable results from treating deforming scars, of different origins, by ionization of iodin. It resulted in subsidence of keloid, restoration of the epidermis, release of adherent tissues, anatomic and functional repair of nerves and muscles, and restoration of joint functioning. The course of treatment lasted from two to fifteen months and even more. When the scar was adherent to bone, the iontophoresis had to be associated with surgical intervention. The technic is described.

Ultraviolet Rays in Treatment of Rickets.—Lesné and de Gennes consider the ultraviolet rays as an excellent treatment of rickets in young children. The effect is not only local, but general. Their theory is that the rays, by way of the sympathetic system, exert an action on the endocrine glands. This modifies favorably the calcium and phosphorus metabolism, and the assimilation of phosphorus.

Ultraviolet Rays in Treatment of Neuralgia and Neuritis.—Lichnitzki extols the use of ultraviolet rays in neuralgia and neuritis. The rays relieve the pains, and may even cure. They are also effectual in pruritus and other paresthesias associated with different skin affections.

Presse Médicale, Paris

32: 1001-1012 (Dec. 17) 1924

Frequency of Pathologic Changes in Appendix. J. L. Faure.—p. 1001.
*Hemoclastic Crisis in Liver Disease. Popper and Kreindler.—p. 1005.
Treatment of Joint Stiffness After Fractures. P. Desfosses.—p. 1007.

Sedimentation Test During Hemoclastic Crisis in Liver Insufficiency.—Popper and Kreindler assert that the changes in the sedimentation time of the erythrocytes during the test hemoclastic crisis are a valuable indication of liver function. They observed the varying speed before, and forty-five or sixty minutes after ingestion of 300-400 gm. milk, fasting. Normal or lessened sedimentation time before the test, with accelerated speed and augmented fibrinogen and albumin content after the milk, occurred in jaundice with a lesion of the liver parenchyma, in catarrhal jaundice and in acute atrophy of the liver. Normal or greater speed before the milk test, associated with a lower speed, a diminished fibrinogen amount, and increased albumins afterward, were noted in cirrhosis, in stasis from heart insufficiency, in metastases in the liver and syphilitic jaundice. No changes during digestion were manifest in jaundice from extrahepatic obstruction, or in convalescents. They describe their technic, and emphasize that the method is more instructive in diagnosis of insufficiency of the liver than the leukocyte count.

32: 1013-1024 (Dec. 20) 1924

*The Hypothalamus Syndrome. G. Guillain and T. Alajouanine.—p. 1013.
Glycosuria and Diabetes in Connection with Pregnancy. H. Vignes and G. Barbaro.—p. 1018.

Syndrome Caused by Lesion of the Hypothalamus Crossroads.—On the basis of a personal case in a woman, aged 63, and the few observations recorded to date, Guillain and Alajouanine state that the syndrome from a lesion in the *carrefour hypothalamique* is an actual morbid entity. It is characterized by manifestations in one half of the body, such as slight paresis, usually without Babinski's sign, absence of spontaneous pains, choreo-athetotic involuntary movements with abnormal attitude of the hand, and cerebellar derangement of coordination and tonus. The lesion is limited to the region below, behind and outward of the optic portion, and affects the pyramidal tract, the sensory and optic tracts, superior cerebellar peduncle and certain extrapyramidal radiations. The elements of the syndrome may be isolated or associated in a given case.

32: 1025-1032 (Dec. 24) 1924

Test Words in Dysarthria. J. Froment and P. Ravault.—p. 1025.
Necessity for Operation in Appendicitis. C. Flandin.—p. 1026.
*Pelvic Varicocele. C. A. Castano.—p. 1027.

Pelvic Varicocele.—Castano considers a varicose state of the veins in the broad ligament as a special gynecologic disease. The neuro-arthritic predisposition in these patients is given in reality by congenital syphilitic dystrophy, and secondarily deficient endocrine functioning. The main symptoms are dysmenorrhea, dyspareunia, hydrorrhea, vesical and rectal tenesmus. An early operation is the only means to ward off changes in the uterus and ovaries. He employed his modified method in twenty-five cases. It is simple, and requires only a few minutes. It aims to divert the blood from the veins in the broad ligament, as he shows by two illustrations.

32: 1033-1044 (Dec. 27) 1924

*Effectual Serotherapy of Chancroid. C. Nicolle and P. Durand.—p. 1033.
*Pathogenesis of Scarlet Fever. R. Pollitzer.—p. 1034.

Effectual Vaccine and Serotherapy of Chancroid.—Practically this same article was summarized here, Jan. 3, 1925, p. 69, when published elsewhere.

The American and the Italian Views on Pathogenesis of Scarlet Fever.—Pollitzer compares the recent researches of the Americans and the Italians on scarlet fever. In his opinion, the research of the Italians has conformed to Koch's three requirements, while the American research has not. The Italians apply their discoveries in immunization, while the Americans, he says, have not reported systematic immunization according to Koch's principles. He believes that the American research has merely cleared up the rôle of concomitant streptococci in scarlet fever.

Revue de Chirurgie, Paris

68: 663-734, 1924

*Sympathectomy. Laignel-Lavastine.—p. 663.
Primary Osteomyelitis in Ribs. Parcelier and Chauveset.—p. 671.
Case of Hydatid Cysts in Posterior Cavity of Omentum. Cignozzi.—p. 689.

Indications for Sympathectomy.—Summarizing his recent book, "The Pathology of the Sympathetic Nerve," Laignel-Lavastine points to the new avenues open to surgeons for the successful operative treatment of the sympathetic factor, which, thanks to the better understanding of the anatomy, physiology and pathology of the sympathetic nerve, is now recognized as active in manifold clinical syndromes. He writes from the internist's and neurologist's point of view.

Revue Franç. de Gynécologie et d'Obstét., Paris

19: 577-600 (Oct. 10) 1924

*Cesarean Scars in Lower Segment. F. Chatillon.—p. 577.
Extraperitoneal Cesarean Section. P. Gudniot.—p. 583.
Myomectomy for Fibroma in Pregnancy. Goinard and Pouget.—p. 589.

Resistance of Scars of Uterine Cervix.—Chatillon observed a normal delivery, of about five hours' duration, in a woman submitted previously to two low transperitoneal cesarean sections. In this case the scars in the cervix supported the stress of delivery.

19: 601-632 (Oct. 25) 1924

*Salpingectomy with Ligamentopexy. L. Gualberto.—p. 601.
*Two Cases of Obstetric Shock. J. L. Audebert.—p. 610.
Pituitary Extract in Obstetrics. P. Gudniot.—p. 616.

Modified Technic for Salpingectomy with Ligamentopexy.—Gualberto demonstrates a technic, giving six illustrations, for this operation, which he has used successfully in over 1,000 cases. After resection of the tube, the mesosalpinx is sutured, and the thread is drawn up to bring the ovary close to the uterus. This is done on both sides, and with a thread tied around each round ligament beyond, these ligaments are drawn together and fastened, thus supporting the uterus in the best position and covering the site of the sutures with peritoneum.

Obstetric Shock.—Audebert reports two cases of shock complicating tedious delivery, twice in one woman, at her first and third childbirth. The other woman had eclampsia at her first delivery and preceding her second, which was followed by shock. Both recovered. In both cases the delivery was slow and difficult, requiring intervention under anesthesia.

Schweizerische medizinische Wochenschrift, Basel

54: 1141-1164 (Dec. 11) 1924

*Temperature and Pulse After Childbirth. A. Labhardt.—p. 1141.
*Kinships with Hereditary Diseases. E. Hanhart.—p. 1143.
Heredity and Bones. H. R. Schinz.—p. 1151. Cont'd.
Primary Cancer of Lungs. I. Sachs.—p. 1156.

Temperature and Pulse After Childbirth.—Labhardt publishes statistics on temperature and pulse in 5,000 women with normal postpartum periods. The instability of the pulse is characteristic. He believes that the postpartum bradycardia is a myth: Only 0.4 per cent. of these women had constantly a pulse rate under 60.

Kinships with Hereditary Diseases.—Hanhart reports the results of three years of investigations on the progenitors in families with hereditary ataxia, heredodegenerative dwarfism (with Fröhlich's syndrome) and heredodegenerative deafness. The valleys of Switzerland where his patients live have still an unmixed population with much inbreeding. The church registers have been kept in order, and this allowed tracing of consanguinity back for 300-400 years. He found no definite indications of changes in the phenotypically healthy individuals transmitting the taint.

Pediatria, Naples

39: 1369-1424 (Dec. 1) 1924

*Specific Antibodies in Scarlet Fever. G. Vitetti.—p. 1369.
*Segments of Leukocyte Nuclei in Vitro. M. Giuffré.—p. 1374.
Erythema Induratum. A. Pagani-Cesa.—p. 1390.
Congenital Umbilical Hernia. S. Lamanna.—p. 1392.
Periodic Vomiting with Acetonuria. S. De Villa.—p. 1402.

Specific Antibodies in Scarlet Fever.—Vitetti confirms the presence of agglutinins, amboceptors and opsonins in the serum of patients and convalescents from scarlet fever. He used Di Cristina's cultures, and an alcoholic extract from the scales as antigens.

Segments of Leukocyte Nuclei in Vitro.—Giuffré incubated human leukocytes with more or less leukolytic serums. He found that the neutrophils with more nuclear segments were injured more than those with few nuclear divisions.

Policlinico, Rome

31: 1611-1645 (Dec. 8) 1924

*Reactivation of Wassermann Reaction. Artom.—p. 1611.
*Splenectomy in Hemolytic Anemia. A. Celiberti.—p. 1619.
Artificial Pneumothorax. A. Borgherini-Scarabellini.—p. 1625.

Reactivation of Wassermann Reaction.—Artom injected 5 c.c. of milk intramuscularly in seventy-one syphilitics. He obtained a reappearance of the Wassermann reaction in twenty-six (35 per cent.) of them—in most cases by the sixth day. One hundred nonsyphilitic controls remained negative.

Splenectomy in Hemolytic Anemia.—Celiberti reports the history of a middle-aged man with splenomegaly and hemolytic anemia, with low color index, normal osmotic resistance of erythrocytes and no clinical jaundice. A series of injections of neo-arsphenamin—made because of a slightly positive Wassermann reaction—impaired his condition further. Blood transfusions and splenectomy were followed by a practically complete return to clinically normal conditions.

Riforma Medica, Naples

40: 1153-1176 (Dec. 8) 1924

*Diuresis of Tissues and Kidneys. A. Muggia.—p. 1153.
Blood Cultures in Typhoid. V. de Dominicis.—p. 1156.
Bleeding Gastric Ulcers. V. Pauchet.—p. 1157.
Accessory Frenulum of the Prepuce. A. Zaffagnini.—p. 1158.

Diuresis of Tissues and Kidneys.—Muggia emphasizes the tissue factor in diuresis. Combination of sodium chlorid with purin derivatives enhanced the diuresis. Combination with injections of mercurial compounds gave negative results. Subsequent injections of a mercurial salt caused less diuresis, probably because of its toxic action on the kidneys. It is contraindicated in nephritis.

Anales de la Facultad de Medicina, Montevideo

9: 799-912, 1924

*Functional Achylia. C. Bonorino Udaondo.—p. 799.
Diverticula of Sigmoid Colon. Bottaro and Barcia.—p. 813.
Radiologic Diagnosis of Osteosarcomas. J. Cunha.—p. 838.
*Symbol for the Reaction of Solutions. D. Giribaldo.—p. 853.
Hydatid Cysts in Left Hypochondrium, Compressing Lower Esophagus. C. Nario and J. C. Campisteguy.—p. 883.
Importance of Necropsies for Progress. Committee Report.—p. 888.

Functional Achylia.—In Bonorino Udaondo's thoroughly analyzed 29 cases of functional achylia, 11 were of the acquired type. In 73.3 per cent. of the 18 others there were signs of Stiller's universal asthenia. In this constitutional group, there were no subjective symptoms from the secretory anomaly except in 2 cases; gastrogenous diarrhea was present in 3. In all, the achylia was a casual discovery. In 2 cases there was a history of acute polyarticular rheumatism. In 15 cases achylia was found with a gastric ulcer; in this group the symptoms from the ulcer were mild. The bowel functioning usually compensates for the congenital secretory anomaly; neurogenous achylia is generally transient under treatment for the general depression. Recognition of the achylia saves from futile and possibly harmful Sippy treatment and other measures.

Symbol to Express Acidity of Fluids.—Giribaldo explains the advantages of his symbol which represents the logarithm of the ratio H/OH. He writes it 1H/OH, without giving the actual logarithm. Normal blood gives —0.56 1H/OH, which corresponds to a p_H of 7.35. In diabetic coma, it averages +0.50 1H/OH, with a p_H of 6.82.

Archiv für klinische Chirurgie, Berlin

128: 347-486 (Nov. 28) 1924

*Case of Albers-Schönberg's "Marble Bones." Clairmont and Schinz.—p. 347.
Hemostatic Effect of Roentgen Irradiations. H. R. Schinz.—p. 402.
*Blood Transfusion. Nather, Ochsner and Boitel.—p. 420.
Free Homoplastic Skin Grafting. Deucher and Ochsner.—p. 470.
Primary Sarcoma of Capsule of Knee. Largiadèr.—p. 480.

Case of Albers-Schönberg's Marble Bones.—Clairmont and Schinz observed clinically, roentgenologically and microscopically a case in a woman, aged 35. The only symptom was the abnormal fragility of the bones. The absence of anemia in their case shows that it is secondary. Of the eight cases of Albers-Schönberg's disease published to date, four were in one family. The therapy of this disease is restricted to overcoming the anemia and guarding against trauma, and treatment of the carious teeth. The nature of the affection admits only a racial prophylaxis. The recessive character warns against inbreeding.

Blood Transfusion.—Nather, Ochsner and Boitel have performed over 100 blood transfusions by the Percy technic, after the Moss preliminary test, and almost always without reactions. After extensive comparative research, they recommend the Percy paraffined glass tube as the most physiologic method for indirect transfusion. For arrest of bleeding, blood transfusion surpasses all other hemostatic measures, besides restoring fluid, hemoglobin, ferments and antibodies.

Deutsche medizinische Wochenschrift, Berlin

50: 1745-1784 (Dec. 12) 1924

Economy in Treatment of Digestive Disturbances. H. Strauss.—p. 1745.
*Internal Treatment of Gallstone Colic. Allard.—p. 1747.
*Autohemotherapy. B. Tenckhoff.—p. 1748.
*Injury from Thyroid Treatment. E. Mosler.—p. 1752.
*Diagnostic Mistakes in Pneumoperitoneum. B. Rabinowitz.—p. 1753.
*Roentgen Treatment of Pulmonary Tuberculosis. Schulte-Tigges.—p. 1754.
*Dosage of Ultraviolet Light. R. Gasaul.—p. 1755.
*The Thyroid After Sympathectomy. Schiff and Heinrich.—p. 1756.
*Influencing Smooth Muscles. G. Ganter.—p. 1757.
Hematology in Welfare Work. E. Jennicke.—p. 1758.
*Treatment of Gastric Ulcer. U. Wolff.—p. 1758.
Sterile Preservation of Syringes. A. Hartmann.—p. 1759.
Apparatus for Anesthesia. G. Schwarz and E. Bergmann.—p. 1759.
The Perineum During Childbirth. W. Hannes.—p. 1760.
French Laws on Medical Studies and Examinations. Schober.—p. 1762.
Survey on the Haff Disease. W. Ewig.—p. 1776.
Gallstones. W. Gent.—p. 1779. Conc'n.

Internal Treatment of Occlusion of Common Bile Duct.—Allard makes a duodenal infusion of at least 300 c.c. of a warm 15 per cent. solution of magnesium sulphate in biliary colic. This produces an exacerbation of the pains, which he combats with injections of papaverin and hot dressings. He had good results in six cases. In three of them there was occlusion of the common bile duct.

Autohemotherapy.—Tenckhoff makes daily intravenous injections of the patient's defibrinated blood in almost every

disease, including gonorrhea and syphilis. He claims that death from postoperative pneumonia does not occur with this treatment. Only small doses (0.1-0.5 c.c.) were tolerated in tuberculosis.

Injury from Thyroid Treatment.—Mosler observed in six patients thyrotoxic symptoms after treatment for obesity with thyroid preparations. The obesity was due to overeating in all of them, and the medication had therefore been superfluous as well as injurious.

Diagnostic Mistakes in Pneumoperitoneum.—Rabinowitz reports the history of two diagnostic mistakes in interpreting the pneumoperitoneum. One was an enlarged liver in lymphatic pseudoleukemia, wrongly diagnosed as a kidney tumor (an authority in pathology confirmed, in addition to this mistake, the presence of cancer cells in the urine sediment). The other was an enlarged spleen diagnosed as a suprarenal gland tumor.

Roentgen Treatment of Pulmonary Tuberculosis.—Schulte-Tigges observed stronger general reactions to deep roentgen irradiation in patients with the nodular type of tuberculosis, than in those with the cirrhotic form. Focal reactions were distinct even when other parts of the body were irradiated. He confirms with Sprungmann the lymphopenia which is a sign of injury of the patient.

Dosage of Ultraviolet Light.—Gassul's apparatus is divided in seven fields, which are gradually exposed for increasing periods of time by pulling out a shutter for a distance of 2 cm. each minute. The resulting redness of the skin together with the chemical (iodometric) test for the intensity of the radiation give a simple individual base for gaging the treatment. Some of his practical conclusions were summarized here, Dec. 20, 1924, p. 2055.

The Thyroid After Sympathectomy.—Schilf and Heinrich extirpated in dogs the cervical sympathetic (including the superior ganglion) on one side. Contrary to Reinhard, they found neither macroscopic, nor microscopic changes in the corresponding lobe of the thyroid. They conclude that this indicates how small the chance is of acting on the thyroid therapeutically from the sympathetic. Yet they admit that clinical experience has to decide in regard to the indications for it.

Influencing Smooth Muscle.—Ganter believes that direct changes of the tonus of smooth muscles (apotonia and anatonia) are frequent, while the corresponding pure nervous changes of the tonus (vagotonia and sympathicotonia) are rare. Since the tonus of the intestinal muscle is increased by the vagus, which decreases the tonus of blood vessels (and vice versa with the sympathetic), it is impossible to explain the increased tonus of both by morphin by an action on the nerves. In a similar way, the lowering of the tonus of both intestine and artery by senna or strophanthin can also be explained only by a direct action on the smooth muscle. He believes that this theory has important therapeutic consequences.

Treatment of Gastric Ulcer.—Wolff pleads for the posterior gastro-enterostomy. Resection of the antrum is a grave intervention, taxing the resistance of the patient to the limit. It is not impossible that the resulting achylia may cause disturbances later.

Deutsche Zeitschrift für Chirurgie, Leipzig

188: 313-434 (Dec.) 1924

*Coagulation in Arrest of Hemorrhage. H. Stegemann.—p. 313.
Anatomy of Infra-Orbital Foramen. D. A. Entin.—p. 358.
Chronic Hematoma in Abdominal Wall of Woman, Aged 73. Blond. —p. 372.
*Importance of Diaphragm for the Circulation. Mettenleiter.—p. 379.
Tests of Serum After Thoracotomy for Tuberculosis. W. Graf.—p. 418.
Fermentation Ileus from Clinical Standpoint. v. Broich.—p. 426.

Coagulation a Secondary Factor in Arrest of Hemorrhage.—Stegemann found, by microscopic observation on living animals, that the natural arrest of bleeding is an extremely complicated biologic process. The circulatory system exerts all its powers in the effort to exclude the bleeding segment of the vessel and divert the blood stream into a collateral course. The entire process Stegemann designates as the autonomous sidetracking of the local blood stream. In this, contraction and coagulation are only minor factors. Experiments with blood made noncoagulable in vivo established that coagulability of the blood is unnecessary in the natural check of hemorrhage. The autonomous sidetracking of the local circulation was observed clinically and experimentally. The details of the process require further study.

Importance of the Diaphragm for the Circulation.—The stronger pressure of the diaphragm and the abdominal walls in deep inspiration, Mettenleiter says, forces a greater quantity of blood from the liver into the inferior vena cava. The changes for the heart are purely topographic; left phrenicotomy does not affect the heart action. The thoracic portion of the inferior vena cava is stretched lengthwise by the drop of the diaphragm. In experiments on dogs, the stretching of the exposed inferior vena cava at every breath was visible to the naked eye. This lengthening increases the capacity of the vein. The passage of blood into the thoracic portion of the inferior vena cava is facilitated by suction, and is further promoted by the unchanging lumen of the opening in the diaphragm. Unilateral phrenicotomy decreases the aspiration.

Klinische Wochenschrift, Berlin

3: 2273-2320 (Dec. 9) 1924

*Reflex, Will and Imagination. P. Karger.—p. 2273.
*Tuberculosis in Children. C. Noeggerath and A. Eckstein.—p. 2276.
*Eosinophilia in Chronic Arthritis. F. Spiro and F. Pfanner.—p. 2279.
*Nutrition of Blood Vessels. F. Brüning.—p. 2282.
*Kations in Parathyroprival Tetany. S. Hirsch.—p. 2284.
*Blood Chemistry Under Stimulation of the Vagus. H. Vollmer.—p. 2285.
*Sedimentation Test. E. Kaufmann.—p. 2287.
Esophageal Cancer in the Chinese. W. Fischer.—p. 2288.
*Brain Symptoms in Therapeutic Fever. A. von Sarbó.—p. 2290.
*Significance of the Enterococcus. K. Meyer.—p. 2291.
*Mechanism of Tetany. P. György.—p. 2294.
*Pregnancy Acidosis. A. Bock.—p. 2294.
Chorio-Epithelioma of the Liver Simulating Ulcer. A. Hiege.—p. 2294.
Bone Implant for Spinal Fixation. A. Henle.—p. 2295.
Compulsory Treatment and Detention. Fischer-Defoy.—p. 2302.

Reflex, Will and Imagination.—Karger tested the knee-jerk in children after asking them to imagine that they wanted to make the jerk (without making movements) and after distracting their attention with the representation of sleep. The highest test was to ask them to inhibit the reflex by the will. He believes that this method is helpful in differentiation between the personalities with predominance of will or of imagination. The treatment of tics (by inhibition exercises or by distracting the attention and suggestion), may be guided by the results of the test.

Estimation of Results from Treatment of Tuberculosis in Children.—Noeggerath and Eckstein have had a large material (1,200 children) under observation for many years. They found no influence of measles and whooping cough on reactivation of tuberculosis. The common opinion is attributed to the dominating influence of single cases in the memory of physicians. They had fine therapeutic results without using tuberculin, and they challenge the statistics of results of specific treatment.

Eosinophilia in Chronic Arthritis.—Spiro and Pfanner found eosinophilia in a number of patients with chronic arthritis. While an injection of sulphur or foreign proteins is regularly followed by a decrease in eosinophils, the percentage and absolute count of these cells increased in these patients. The eosinophilia, which they regard as a constitutional sign of arthritism, was present also in a brother of one of their patients.

Nutrition of Blood Vessels.—Brüning confirms on man the possibility of sufficient nutrition of the wall of blood vessels by the blood stream. Removal of vasa vasorum (with the adventitia) in periarterial sympathectomy does not impair it in the young. The chances are less favorable in subjects with arteriosclerosis.

Kations in Parathyroprival Tetany.—Hirsch observed two middle-aged women with parathyroprival tetany. Strontium bromid (3 gm. daily) arrested the attacks.

Blood Chemistry Under Stimulation of the Vagus.—Vollmer determined the concentration of proteins, calcium and potassium in the serum after ingestion of cholin and injection of pilocarpin—both stimulants of the vagus. The changes

of the inorganic ions could be explained by the thickening of the serum. He warns against premature generalization of the ion theory of action of the vegetative nerves.

Sedimentation Test.—Kaufmann found a lowered concentration of the plasma in the sedimented blood compared to the unsedimented.

Therapeutic Fever.—Sarbó observed retention of urine and general rigidity in several patients with multiple sclerosis. These symptoms appeared always during fever produced by injections of foreign proteins. He attributes them to an irritation of the nuclei of the hypothalamus and midbrain.

Significance of Enterococcus.—Meyer regards the enterococcus (*Streptococcus faecalis* or *Micrococcus ovalis*) as a special type. It is normally present in the intestine but has great pathologic importance in purulent affections such as appendicitis, cystitis and pyelitis. It rivals the colon bacillus in the etiology of cholecystitis; most streptococci found in the latter affection are in reality enterococci. The assumption of the viridans as the cause was due to the inadequacy of Schottmüller's differentiation.

Mechanism of Tetany.—György discusses the mechanism of provocation of laryngospasm, apnea and convulsions in spasmophilia. The attacks appear usually in fever, crying, emotions, awakening, and with overfilled stomach. All these conditions have been found to lead to an alkalosis. The production of the symptoms of respiratory tetany in health is easier in high altitudes. It is still easier in children inclined to tetany who have even in the interval a low carbon dioxid tension and low alkali reserve in the blood, and an increased irritability of the respiratory center.

Pregnancy Acidosis.—Bock found with Bokelmann and Rother that pregnant women have from 20-30 per cent. more acetone bodies in the blood than the nonpregnant. They attribute the pregnancy acidosis to the ketonuria.

Medizinische Klinik, Berlin

20: 1757-1792 (Dec. 14) 1924

Bronchial Cancer. H. Assmann.—p. 1757.
*Immunization Against Diphtheria. R. Kraus.—p. 1760.
*Lumbar Puncture. W. Wechselmann.—p. 1761.
Fatal Professional Accident from Roentgen Apparatus. M. Levy-Dorn.—p. 1762.
*Symposium on Gallstones. Kappis et al.—p. 1763.
*Smallpox and Preparedness to Fight It. R. Ziel (Prague).—p. 1767.
Intrathoracic Auscultation. S. Bondi and G. Spengler.—p. 1769.
Prevention of Cancer. G. Scherber.—p. 1769. Conc'n.
Invert Sugar Infusions. F. G. Meyer.—p. 1772.
Nontuberculous Spontaneous Pneumothorax. A. Muncke.—p. 1773.
Gaucher's Disease. L. Pick.—p. 1774. Cont'd.
Psychodiagnosis and Psychotherapy. H. Pendel.—p. 1777. Cont'n.
Cancer and Its Treatment. O. Strauss.—p. 1779. Cont'd.
History of Cisterna Puncture. M. Westenhöfer.—p. 1791.

Immunization Against Diphtheria.—Kraus regards the T-A immunization as unsafe for the practitioner. It was found that minimal amounts of acid, or freezing, can dissociate the toxin, which then produces its action. He believes that toxoids (anatoxin), prepared by the action of formaldehyd, should be used generally in active immunization.

Lumbar Puncture—Wechselmann modifies Antoni's method by using a longer leading needle, and puncturing the meninges with a much finer needle. The fluid escapes slowly, and there are no subsequent disturbances—probably because the opening in the meninges closes immediately. He makes the punctures on outpatients.

Symposium on Gallstones.—The collective inquiry on the advisability of early operation for gallstones is continued. As before, the surgeons favor it; the internists are reserved. Only Krehl is an exception by declaring: *Im Ganzen eher operativ, als nicht operativ, sogar recht operativ.*

Smallpox and Preparedness to Fight Epidemics.—Ziel reports the epidemiologic investigations on a few cases of smallpox imported into a family of cultists. He describes the outfit kept ready in Czechoslovakia for fighting small epidemics. Two physicians are aided by nurses and disinfectors—the chauffeurs being also trained in disinfection. Four automobiles carry the necessary apparatus, including a complete laboratory.

Monatsschrift für Kinderheilkunde, Leipzig

29: 97-192 (Nov.) 1924

*Protection Against Anaphylaxis in Serotherapy. H. Fernbach.—p. 97.
*Blood Albumin and Urea Therapy in Nephritis. A. Ebel.—p. 116.
*Myoclonic Epidemic Encephalitis in Children. H. Zweig.—p. 122.
*Nodose Rheumatism in Children. H. Zweig.—p. 131.
Serum Prophylaxis of Measles. Dreyer.—p. 134.
*Sedimentation Speed in Diarrhea in Infants. H. Wolf.—p. 137.
*Puncture of the Ventricle in Infants. Miskolczy and Waltner.—p. 141.
Feeding in Dysentery in Infants. O. Göttche.—p. 146.
"Rectal Feeding with Vitamins." M. Klotz.—p. 148.
*Liver Function Tests in Infants. J. Dusár and Hensch.—p. 150.

Alleged Protection Against Anaphylaxis in Serotherapy.—Fernbach injected subcutaneously 1 c.c. of undiluted horse or sheep serum in ten clinically healthy children about fourteen times within twenty-three days. These doses of the serum did not induce antianaphylaxis. The local reaction occurred unmodified each time, showing that this Besredka method of preliminary small doses does not confer protection against anaphylaxis from the serum in a larger dose. Consequently subcutaneous injection of a small dose does not protect against injury from a subsequent intravenous injection of homologous serum. Intramuscular injection should be preferred, as it has practically the same therapeutic value as the intravenous, and is less dangerous. He adds, however, that preliminary subcutaneous injection of a small dose of the serum may be useful, as it will warn of excessive susceptibility, and thus allow avoidance of a too strong reaction, or anaphylactic shock.

Blood Albumin and Urea Therapy in Nephritis in Children.—Ebel found in four cases of nephritis of the nephrosis type, with edema, in children, from 4 months to 11 years of age, a diminished albumin content of the plasma, an increase in fibrinogen, augmentation of globulin proportionally to the albumin, and considerable acceleration of sedimentation of the erythrocytes. Large doses of urea may be effective in such cases, which resist other diuretics.

Myoclonic Form of Epidemic Encephalitis in Children.—Zweig observed this form of epidemic encephalitis in six children, aged from 1 to 8 years. The rhythmic muscular spasms, 40-60 in a minute, were symmetric in the shoulder girdle and arms. Microscopic findings in one instance showed that the ventral horns of the spinal cord were involved. The lesion being most pronounced in the cervical area, the muscles of the neck and of the diaphragm were paralyzed.

Nodose Rheumatism in Children.—Reporting eight cases of nodose rheumatism in three boys and five girls, Zweig emphasizes that the disease is not rare, but the small nodules seem to be often overlooked. In one of these cases the etiology of a pericarditis was revealed by discovery of these nodules.

Sedimentation Speed of Erythrocytes in Diarrhea.—Research on forty-seven infants, from 4 weeks to 11 months old, with diarrhea, demonstrated acceleration of sedimentation in diarrhea from dyspepsia or toxicosis. No changes occurred in sedimentation speed when the diarrhea was a mere local disturbance, without general toxic action.

Puncture of Lateral Ventricle.—Miskolczy and Waltner describe the technic for comparatively harmless puncture of the lateral ventricle in infants.

Liver Function Tests for Infants.—Dusár and Hensch found with the alimentary hyperglycemia test, in healthy, breast fed infants, from 6 to 10 weeks old, a blood sugar quotient of 1.5. The maximum rise of the curve occurred usually after forty minutes. The bilirubin content of the serum varied from 1.5 to 1.8, while in the duodenal juice it ranged between 11.5 and 14.5. The levulose test was negative, as also the urobilinogen reaction in the urine. The cases of congenital syphilis showed a disturbed liver function in 100 per cent. with the levulose test; in 72 per cent. with the alimentary hyperglycemia test, and in 63 per cent. on determination of the bilirubin. The tests showed relative insufficiency of the liver in pyelitis, grave anemia, icterus neonatorum and also in Leiner's dermatitis.

Münchener medizinische Wochenschrift, Munich

71: 1745-1780 (Dec. 12) 1924

*Metabolism in Fever. W. Birk.—p. 1745.
*Vegetative System and Lymphatism. W. Arnoldi.—p. 1746.

*Sympathicotonic Migraine. O. Muck.—p. 1749.
*Vaccine Immunity. W. Kuhle.—p. 1749.
*Diagnosis of Gallbladder Affections. K. Fritzler.—p. 1750.
*Wassermann Reaction in Prostitutes. Klemm.—p. 1751.
Phenobarbital in Treatment of Excitement. E. Schneider.—p. 1753.
Ponndorf Vaccination. Burchard.—p. 1754.
*Accidental Diphtheria Infection. J. Hammerschmidt.—p. 1755.
Abortive Treatment of Furuncle. A. Schöle.—p. 1756.
Mineral Water of Adelholzen. B. Bleyer.—p. 1756.
Gout. F. Umber.—p. 1758.
Medicine in the Eighteenth Century. G. Honigmann.—p. 1760.
Physical-Chemical Terms. E. Wiechmann.—p. 1762.

Metabolism in Fever.—Birk made metabolism studies on children in measles, chickenpox, and after vaccination. He observed changes in the nitrogen and salt metabolism even in period of incubation—before the fever starts. Therefore he would prefer the term "metabolism in infections." He confirms Malmberg's observation on retention of nitrogen in the later part of the incubation stage of measles.

Vegetative System and Lymphatism.—Arnoldi believes that the predominance of the parasympathetic system (including the nerves, hormones, ions and physical contact membranes) may cause chronic conditions of local or general stasis with swelling of organs and increased formation of lymph. He believes that it is an important condition for development of lymphatism. Atropin and thyroid treatment would seem rational to him.

Sympathicotonic Migraine.—Muck has continued his observations on the white spots appearing on the nasal mucous membrane after application of epinephrin and irritation by a probe. He found them regularly in migraine on the affected side, and concludes from this that the migraine is due to an affection of the upper cervical ganglion. He made similar observations in functional Menière's syndromes.

Vaccine Immunity.—Kuhle made serial vaccinations against smallpox in children. He found that with an interval of four days, the new inoculations developed less. None took of those made with an interval of seven days.

Diagnosis of Gallbladder Affections.—Fritzler found an increase in the urobilinogen in the urine after intravenous injections of foreign proteins in chronic affections of the gallbladder.

Wassermann Reaction in Prostitutes.—Klemm found a positive Wassermann reaction in one third of 295 registered prostitutes in Leipzig. He hopes that the regular examination of blood will aid in treatment. He has already had encouraging results in the first half year (50 per cent. of them became negative).

Accidental Diphtheria Infection.—Hammerschmidt infected his finger accidentally with a needle containing diphtheria bacilli. He recovered in fourteen days. The antitoxic titer of his serum did not increase, but the agglutinins became four times stronger.

Wiener klinische Wochenschrift, Vienna

37: 1275-1360 (Dec. 11) 1924

*Cancer of Mice. F. Mandl and F. Stöhr.—p. 1275.
*Diabetes in England. C. Pirquet.—p. 1277.
Dysesthesia in the Ear in Neurasthenics. S. Gatscher.—p. 1281.
Case of Hermaphroditism. Kneringer and Louros.—p. 1282.
Dosage of Bismuth. F. Mras and R. Kohane.—p. 1285.
*Reflex Spasm. H. Januschke.—p. 1286.
*Regular Congenital Asymmetry. S. Weiss.—p. 1288.
"Cow's Milk Treatment of Goat's Milk Anemia." E. Kirsch-Hoffer and O. Kirsch.—p. 1290.
Diagnosis of Typhoid. F. Kovacs. Supplement.—pp. 1-14.

Cancer of Mice.—Mandl and Stöhr produced tar cancer in only 6-8 per cent. of the surviving mice. They attribute this low percentage to the food (bread), large water intake and fresh air in the wire cages. Scarification of the skin did not improve the results, but operative measures enhanced the growth of a beginning cancer. The tarring gave a certain amount of protection against inoculated tumors. In one animal, microscopic sections revealed a cancer, although the skin was macroscopically only thicker. Faradization made mice less resistant against inoculated tumors.

Diabetes in England.—Pirquet reviews the official statistics on diabetes in England. Only senile diabetes has increased in the last eighty years. This confirms the theory that its pathogenesis is different. While there were, relatively, more deaths of men from diabetes in the middle of the nineteenth century, the mortality of women is now greater.

Reflex Spasm.—Januschke's patient was an army officer with a large and deep scar after a bullet wound of the scapular region. The slightest touch of this region induced a violent spasm of the upper extremity. The local convulsion was so severe that the man sometimes lost his balance and fell. The patient who had been sick for two years recovered after ten days of application of moist heat and analgesics. The author presents this as an example of physiologic pharmacodynamic principles applied in therapy, and refuses to believe that the result was due to suggestion.

Regular Congenital Asymmetry.—Weiss found a flattening of the right parietal-occipital region in the new-born much more frequently than a change of the opposite side. This accounts for his observation that a baby lying at the left side of the mother turns his head toward her.

Zentralblatt für Chirurgie, Leipzig

51: 2743-2790 (Dec. 13) 1924

*Radiation for Disclosure of Latent Infections. H. Fründ.—p. 2744.
Spontaneous Breaking Up of Gallstones in Gallbladder. L. Kirchmayr.—p. 2747.
Pyloritis with Spasm. R. Bertelsmann.—p. 2752.
Torsion of Congenital Diverticulum of Appendix. Bachlechner.—p. 2753.
Case of Echinococcus Cyst in Omental Bursa. J. Koch.—p. 2754.
Introduction of the Gastroscope. R. Schindler.—p. 2756.

Irradiation for Disclosure of Latent Infections.—The practical importance of "shock irradiation" is in the possibility of revealing latent foci of infection, and in differential diagnosis. It is of special value before operative intervention on joints stiff as a result of acute inflammatory processes. Fründ irradiates the suspected area with a one-fourth to one-third filtered skin dose. If latent infection exists, local rise in temperature, redness, and edema appear within twelve to twenty-four hours. With a doubtful reaction, a second, larger dose is advised, in a day or two. Irradiation of the surface by a one-third skin dose, followed, if without reaction, by a one-third dose exposure of the focus is the test for osteomyelitis; a reaction confirms the diagnosis. Tuberculous and syphilitic lesions do not respond with an acute inflammatory reaction.

Grèce Médicale, Athens

20: 85-92 (Nov.) 1924

Experimental Research on Pathogenesis of Edema. Joannidès and Vassilopoulo.—p. 85.
Dilatation with Diathermy in Stenosis of Urethra. V. I. Marselos.—p. 86.
Priapism Complicating Appendicitis. G. Drè Kolias.—p. 88.
Aerophagia Complicating Appendicitis. Idem.—p. 88.
Present Status of Pneumonic Form of Pulmonary Tuberculosis. Piguet and Giraud.—p. 89. Cont'd.

Svenska Läkaresällskapets Handlingar, Stockholm

50: 205-300 (Nov. 15) 1924

*Gas Cysts of the Intestine. J. Naeslund.—p. 205.

Research on Gas Cysts of the Intestine.—After reviewing eighty-one cases on record, Naeslund reports three cases—reproducing a total of fifty-seven photomicrographs. In the first case, recurrence in seven months followed resection of a portion of the small intestine, with improvement after a second operation. Gastro-enterostomy resulted in complete recovery in the second instance, and no recurrence followed excision in the third instance. He studied nine cases in pigs, and regards pneumatosis in man and in pigs as identical. Microscopic examination revealed traces of inflammation in all instances of gas cysts of the intestine. Cultivation of the cyst tissue from six pigs produced a gas-forming, rod-shaped bacterium, which Naeslund calls the pneumatosis bacterium. The presence of specific antibodies in the serum from the pneumatosis cases testified that this bacterium was the probable cause of the gas cysts. The agreement of the results in animal experiments with injections of tissue from gas cysts and injection of the pneumatosis bacterium indicated that they had a common cause, and were consequently due to the pneumatosis bacterium in the inoculated tissue.